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$1,700,000,000 from investors for new telephone facilities in the last two years

THERE are one hundred and seventy bags in this picture. Suppose each bag contained ten million dollars.

That would make $1,700,000,000—the amount that investors have furnished for the expansion and improvement of your telephone service in the last two years. Further substantial amounts are being invested this year.

Investors put their money in the telephone business in the hope of security and a reasonable return. Every telephone user shares the benefits in more and better telephone service.

In the Bell System, the term investors means hundreds of thousands of small investors in every walk of life and in every section of the country—men and women just like yourself. The telephone business has been built by the savings of the many rather than the wealth of the few.

The large sums that have been put into new facilities in the last two years alone give you some idea of the cost of providing and improving telephone service. The instrument in your home and the few wires you see are only a small part of the $257 investment behind every telephone.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Report Urges 300 More Community Junior Colleges

PRESIDENT TRUMAN'S Commission on Higher Education issued during January one volume of its six-volume report which was devoted to community junior colleges. The report of this distinguished group of educators and laymen directs attention of thinking people everywhere to the function and need for such institutions throughout America.

Many students of the educational scene believe that the years immediately ahead will see a development of junior colleges similar to the development of high schools which followed World War I. The advocates of community junior colleges seem to be very conscious of the fact that our regular colleges and universities throughout the country have about reached the limit of possible growth — and, indeed, that many of them are too large and should not under any circumstance become larger.

Several students of education stress the fact that the increasing growth of institutions makes it more and more difficult to provide effective educational situations. Another consideration for the establishment of community junior colleges is the natural desire of many parents to keep their children who have finished high school close to the parental fireside during the early part of their college preparation at least. Also, there is the growing belief that, while thousands of American youth would profit greatly by two years of general college educational preparation, it may be inadvisable for many of them to go further.

Again, leaders in all phases of American business have pointed out the scarcity of technicians, junior executives, and skilled operatives. It is coming to be felt that people in these classifications need not only more general education than they get from the usual high school course, but in addition technical skills which many believe could be developed in a junior college.

These reasons along with others caused the President's Commission on Higher Education to recommend the early establishment of at least 300 additional junior colleges strategically placed throughout the country. Municipal officials and civic leaders should give close attention to such a proposal and should take pains to acquaint themselves of the needs for such institutions which exist in their own communities.

Cooperation Urged in Furnishing of Municipal Services

INTER-COMMUNITY cooperation is not new, but the intensity of its application is a comparatively recent development, declared Francis H. Wendt, Mayor of Racine, Wis., in a recent address before the League of Wisconsin Municipalities. Terming the trend toward decentralization of population in metropolitan areas "one of the most significant developments in the past 25 years," Mayor Wendt urged that municipalities cooperate in providing and contracting for public services.

He pointed out that the creation of metropolitan sewerage districts in which the independent government units switch from building independent sewer facilities to the development of a joint system has already received favorable public reaction. The extension of sewer and water facilities to outlying territory is very costly to the parent city, however, and it is advisable for the parent city to safeguard its own future through carefully worded contracts, he stated. The buying city or territory, on the other hand, is saved the cost of a large investment in supply and filtration equipment and is usually furnished with a much better product than its individual financial resources would permit.

The sale of fire service by a parent city to its smaller neighbors is a common practice. Mayor Wendt suggested other extra-territorial agreements:

Services of the health commissioner and his staff for food inspection and sanitation controls, which are of critical importance in fast-growing areas; services of the city planning staff of the City Plan Commission; services of the building and plumbing inspection departments; services of the park and recreation staff in the development of a detailed plan to be extended to outlying urban areas; ash, rubbish, and garbage removal; library services on a book-rental or use basis, and the extension of high-school facilities to outlying districts.

Working agreements on the above would be to the distinct financial advantage of the smaller community, Mayor Wendt believes. Concluding, he said:

"The time has come in many of our metropolitan areas when the problems in the suburbs, the future of the central city, the furnishing of city services to outside areas must be considered from a long-range point of view. It is also reasonable to expect that a great deal of the outlying areas will at some time in the future become part of the central city, or that some larger unit of administration will be authorized to which the central city might dedicate its authority and powers.

"Whatever determination is made, there should be no long delay by the central city in formulating a definite policy. Further delay only postpones and makes more aggravating the problems now existing."

Who is to Blame For Poor Public Relations?

WHEN public relations are bad, said Carl Andrews, editor of the Roanoke, Va., *World News*, the fault lies at the top of the management level, not the bottom. Those in authority either have no sense of public relations or don't give a damn.

Water management should realize that its purpose is not solely one of making money. Too many fail to take the taxpayer into their confidence. Many consider water necessary, so why bother to consider the wishes of their customers? Many forget that they are working for the people and ignore them except when it becomes necessary to raise the rates.

Too many fail to take advantage of the press. It ought not to be necessary for a reporter to dig for facts concerned with the operation of a publicly owned utility.

Mr. Andrews made these points in a talk before the Virginia section of the American Water Works Association, held in Roanoke recently.

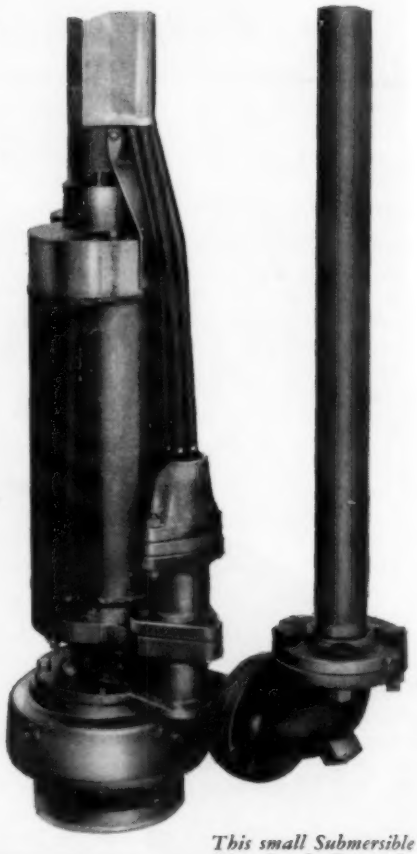
Study Analyses Civil Service Dismissals

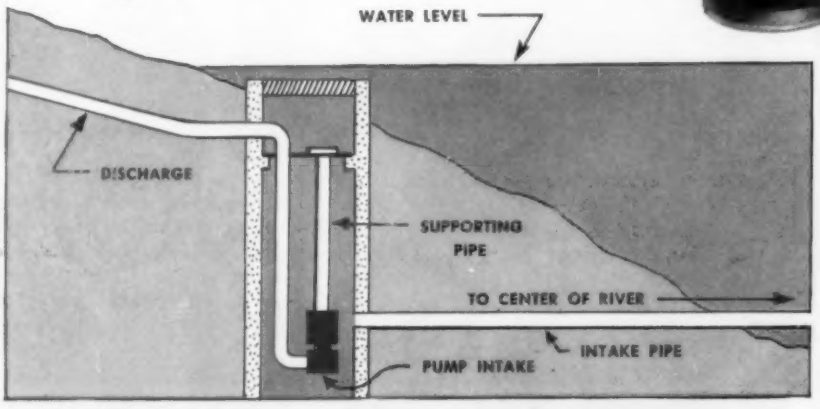
CRITICS of civil-service systems will henceforth be denied the use of one of their major arguments as the result of a study completed recently by the Civil Service Assembly of the dismissal practices of 111 state and local civil service agencies. The study shows conclusively that civil service laws do

Pumping from lake or river?
. . . with icing in winter?
and high water in the spring?

get *Under* the trouble with a BJ

SUBMERSIBLE RIVER INTAKE PUMP





This small Submersible River Intake Pump delivers river water at 100 gpm against a 55 ft. head. Consistent water delivery in spite of 40° below zero North Dakota Winter temperatures and Spring high water 45 feet above the pump intake.

CAPACITIES: to 5000 gpm
MOTOR SIZES: 7½ to 350 hp
INSTALLATION: Vertical, Horizontal, or on an incline

Down at the bottom of the river or lake it doesn't matter about ice or high water. That's why the Submersible is the logical solution to this kind of pumping problem. It operates regardless of surface conditions.

Sealed oil-filled submerged motor is close-coupled direct to pump (pump can be any one of several different types).

Starting panel (equipped for manual or automatic starting) can be located at any convenient point above flood stage. Discharge pipe should be buried enough to eliminate freezing.

Many other advantages. Easy to install. Simplified intake structure. No adjustments. No pump house. Operates for months without attention. Safe against vandalism.

Byron Jackson Co.
Established 1872
LOS ANGELES 54, CALIFORNIA
Offices in Principal Cities

not "freeze" incompetent employes in lifetime public jobs.

For the 111 state and local civil-service agencies studied, including those of 38 major cities, 42 smaller cities and towns, and 17 counties, the dismissal rate for 1946 averaged 1.3%, only slightly lower than the current discharge rate for private industry, taken as a whole, as reported by the U. S. Bureau of Labor Statistics.

The argument has frequently been made in the past that even where dismissal action is taken in good faith by a public official, his decision is frequently reversed by a civil-service board, with the result that incompetent personnel are reinstated or are not fired in the first place. The Civil Service Assembly's study, however, shows that in 1946 the dismissing authorities' action "stuck" in over 95% of the cases open to appeal, and that appeal boards backed up the original decisions to dismiss employes in two-thirds of the contested cases.

Selecting Essentials Among Desirables in Public Works

LIKE the individual's, the city's wants seem limitless and always exceed its resources, declares the December issue of *Bureau Notes*, published by the Detroit Bureau of Governmental Research. Each addition to income seems to compound additional desires. Taxpayers can never provide enough to finance all of the city's wants, and the line must be drawn.

For determining what things are essential, basic, or indispensable, the Bureau recommends that each project should undergo analysis along these lines:

- Will it prevent the direct loss of life or property?
- If the project is not constructed, will the physical health of the residents be impaired?
- Will it create a facility without which urban living could not continue?
- Will it compete with an existing facility of the same kind or same general purpose?
- Will it actually solve the problem and fill the essential need?

All basic essentials should be provided before *any* "desirables" are constructed. The *Bureau Notes* offer some illustrations, as follows:

For example, police and fire protection, streets, sewers, and schools cannot very well be dispensed with under current standards of city living. These are not exclusive in their importance, but they at least typify to us things basic in an urban community. They are not merely means of adding to our enjoyment or convenience. They are services upon which our urban existence today largely depends. Their withdrawal would result in immediate and widespread loss to the community.

However, even among essential services, priority can be determined. At a given time, not all basic needs are equal. Although a police precinct station may be needed for a newly populous area of the city, that area can be patrolled without serious effects on everyday life from an established police station not ideally located. But if the same area had to be protected by a not-convenient fire station, the difference in time of the engine's run might mean the difference between saving life and property and losing it.

Lack of Train Visit No Bar to Local Freedom Weeks

MANY communities that will not be visited by the Freedom Train during its one-year tour of larger American cities can profit from the Freedom Week observance held last month in Montclair, N. J. There the Montclair Development Board announced and conducted a Freedom Week featuring a display of local historical documents. These were housed in a large trailer truck that was moved from point to point in town.

The material was assembled from local sources and from the State Library at Trenton, to give an insight into the section's early history and the struggle of settlers to establish their freedom. There were special school, club, and church exercises during the week. An afternoon meeting in the high school auditorium started the ceremonies, and the documents that later went aboard the Freedom Truck were displayed in the school's lobby. The local observance, which had the encouragement of the American Heritage Foundation, sponsors of the Freedom Train, was proclaimed by Mayor George K. Batt, who set the period as one for "rededication to American ideals and principles."

A similar project was recently discussed in the *Seattle Municipal News*, which had this to say about the idea:

"Why shouldn't we in Seattle have our own 'Freedom Train'? There must be documents extant such as the original city charter, early newspaper clippings of big events in the city's history, and photographs of city-builders which could be brought together temporarily in a display. This could be sent around to the various school civics classes and be made available to civic organizations.

"Certainly these items would vividly bring alive the dull pages of history books and would show pupils, and their elders, too, the difficult past on which we have built the present splendid city of ours."

How Much Worse Will Our Traffic Get?

TO EMPHASIZE the need for immediate and sustained measures to improve urban traffic conditions, Victor Roterus, resident director of the Social Science Research Project at the University of Michigan, estimated traffic requirements for 1950 and 1960 at the Fifth Press Seminar, "Breaking the Urban Traffic Jam," sponsored by the Public Administration Clearing House in Chicago. He declared:

It appears conservative to assume that there will be about 810 passenger cars per 1,000 families in 1950 and about 830 in 1960. When these figures are applied to the careful estimates of the Bureau of Census as to the number of families we will have in those years, you get the following estimate of passenger-car registrations for the United States:

1940—27.4 million (actual)
1941—29.5 million (actual and last peak year)
1950—33 million (estimated)
1960—37 million (estimated)

In order to estimate the annual volume of passenger car traffic which we can expect from these vehicles, it is necessary to make some assumptions about the average annual mileage each vehicle will travel. From 1936 through 1940, in spite of fluctuations in national income and with negligible change in family incomes over the period, the average annual mileage per passenger car increased steadily at a rate of about 100 miles per year (from 8,622 per car to 9,079). From 1940 to 1941, when a substantial increase in family incomes occurred, average mileage per vehicle increased by 200 miles, or double the previous rate.

In light of these facts, again it seems reasonably conservative to assume an average mileage increase of about 80 miles per year from 1941 to 1950, or an average mileage of 9,800 per passenger vehicle in 1950. For 1960, assuming an even lower rate of increase, you get an average mileage of 10,500. Applying these mileage figures to the number of passenger car registrations previously estimated the following estimates of passenger-car traffic emerge:

Year	*Total Passenger Car Miles Traveled*	*% Increase Over Peak Recorded Year (1941)*
1941	275,685,000,000	.....
1950	323,400,000,000	17.3%
1960	388,500,000,000	40.9%

Thus over-all traffic for passenger cars in the United States can be conservatively estimated to increase 17% in 1950 over the peak year of the past (1941), and by 41% in 1960. Personally, I think these are minimum estimates.

Although I have not attempted to estimate future truck and bus traffic in this paper, it is evident from these figures of passenger-car mileage that the problem of traffic congestion can truly be expected to remain with us for some time.

Easing the Load ON A CITY'S POWER PLANT

Columbia, Missouri, obtains several distinct benefits from its new 1,000,000-gallon Horton spheroidal elevated tank. One of them is a reduction in pumping costs. This is accomplished by eliminating the necessity of pumping during a 3 to 4 hour period in the evening when the peak electric load is on the municipal power plant. The tank has sufficient capacity so that the high service pumps may be shut down during this period, thus relieving a portion of the demand on the boilers. The tank is refilled at off-peak periods, utilizing surplus power plant capacity and thus reducing power costs.

Columbia's water supply is taken from three deep wells ranging from 1200 ft. to 1500 ft. in depth. The water is pumped into underground reservoirs having a capacity of 4½ million gallons and repumped from these reservoirs into the distribution system by steam driven service pumps.

In addition to reducing pumping costs and improving water pressures, this elevated tank, together with two new fire stations and larger mains in several areas, is expected to lower the insurance premiums an estimated $60,000 to $75,000 per year for the residents of Columbia.

Quotations on Horton elevated water tanks in capacities to meet your requirements available upon request.

Engineering DATA

Capacity of Tank—
1,000,000 gallons.

Height to Bottom—
134 feet.

Design—
Spheroidal-shaped tank supported on two rings of cylindrical columns with a central riser of the same diameter.

Area Served
Entire city—about two square miles.

Distribution Mains—
60 miles of 4-inch to 6-inch diameter.

Maximum Daily Use
2,000,000 gallons.

Minimum Daily Use—
900,000 gallons.

CHICAGO BRIDGE & IRON COMPANY

Birmingham 1.....1502 North Fiftieth Street
Houston 2.....2101 National Standard Bldg.
Tulsa 3.....1625 Hunt Bldg.
New York 6.....3308—165 Broadway Bldg.
Cleveland 15.....2236 Guildhall Bldg.
Los Angeles 14.....1403 Wm. Fox Bldg.
Chicago 4.....2127 McCormick Bldg.
San Francisco 11.....1233-22 Battery Street Bldg.
Philadelphia 3.....1616-1700 Walnut Street Bldg.
Atlanta 3.....2114 Healey Bldg.
Havana.....402 Abreu Bldg.
Detroit 26.....1501 Lafayette Bldg.

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PENNSYLVANIA

Water Supply and Treatment

In-Place Bituminous Pipe Lining By An Electrolytic Process

THE British-developed system of lining water pipes with a coating of bitumen by an electrolytic process came in for examination at the New England Water Works Association annual meeting held recently in Boston. The process was explained by Alfred B. Anderson, chief engineer of the Water and Sewage Division, Pittsburgh Pipe Cleaner Company, Pittsburgh, Pa., representing the company licensed to use the process in the United States.

Briefly, the Eric process is an electrolytic method for depositing an especially prepared bitumen compound in an aqueous solution on the pipe interior. It resembles in principle the copper or silver electrolytic plating method with minor changes.

HOW METHOD WORKS

In this particular work, the pipe serves as the anode surrounding the cathode, which is drawn through the main, and the bituminous electrolyte fills the pipe completely. Thus the generator completes the electric circuit, forcing the cathode to deposit molecules of bitumen on the pipe surface. The coating stops automatically when the bituminous surface becomes thick enough to prevent the passage of current within the field.

In practice, the forward movement of the cathode is predetermined, and its speed is based on the size of the pipe plus other calculable factors. An ammeter and voltage reading constantly reveal to the operator the exact condition of the processing. The speed of cathode travel depends on operating conditions and ranges from 2 to 6 feet per minute, depending on the size of the pipe.

PIPE MUST BE CLEAN

In order to be successful, however, the pipe to be coated must be thoroughly clean. The operators use a tool composed of plows, scrapers, and brushes operating under high pressure to break away any deposits, dig out pits, and brush the entire interior in one operation.

Mr. Anderson listed the salient factors affecting the cost of the operations as follows:

1. The maximum length of pipe that can be coated is 1,000 feet.
2. A line is out of service for short periods only.
3. Corporation taps, interconnections, or other fittings are not exposed.
4. Pipe is immediately available for use after coating process is completed. A few minutes of flushing is required before restoring the pipe to service.
5. No possibility exists that a main can be blocked.
6. Since the electrolyte is an emulsion of bitumen, it does not require a dry pipe.
7. The coating does not materially reduce the cross-section of the pipe.
8. The coating imparts no taste or odor to the water and is harmless.

Portable Ozone Pilot Plant

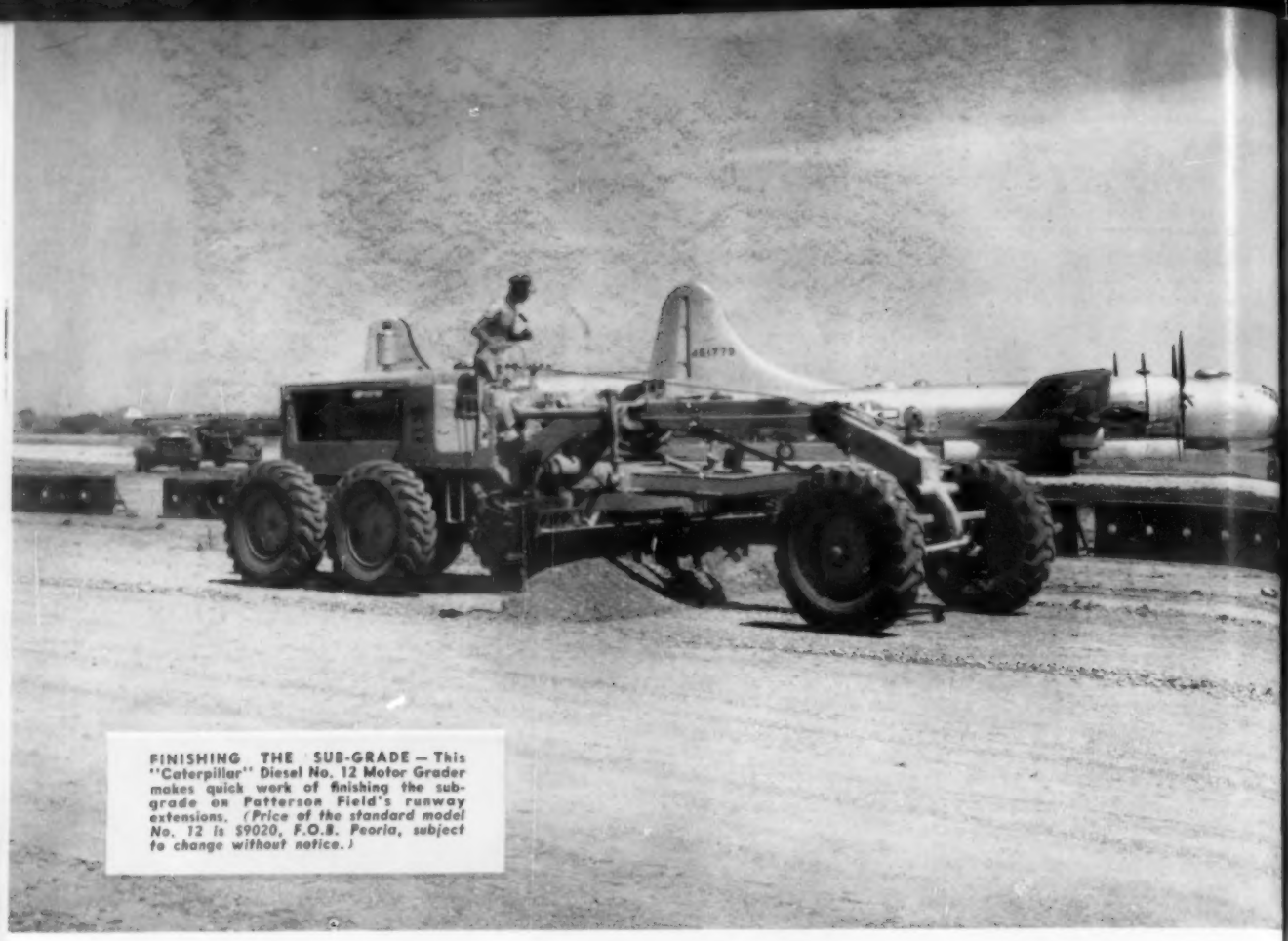
A portable ozone treatment plant.

YOU CAN'T ship a container of ozone out for a trial run the way you can other water-supply chemicals. So the Welsbach Corp., Ozone Processes Div., decided to build a portable pilot plant instead.

As Mr. Victor Hann, chief engineer of the Ozone Processes Division, pointed out before the New Hampshire Water Works Association recently, the factors that make ozone useful to water works men are the same ones that make it impossible to ship as a gas. It is a strong oxidizing agent, one of the most powerful known. It reacts with substances that produce taste, odor, and color, and destroys them. It kills bacteria, micro-organisms, and viruses. But it is unstable, being composed of oxygen in an active state. Because of its instability, it cannot be bottled and stored, but must be manufactured as needed at the point of use.

The pilot plant overcomes this difficulty. Its design incorporates all essentials, including ozonators, chemical feeders, settling basins and filters, and can produce treated water at the rate of one gallon per minute. The plant is mounted in a large house trailer reinforced to carry the additional load imposed. The design is flexible enough to duplicate almost any treatment plant and to feed any chemicals in addition to ozone that may be required to condition water.

The mobile plant has been in use more than a year. Representative of its work has been its use to determine whether Bangor, Me., can treat the water from the Penobscot River and free it of objectionable tastes and odors. Mr. Hahn stated that these tests had indicated decreased costs of treatment sufficiently large to offset the operation of an ozone plant.



FINISHING THE SUB-GRADE — This "Caterpillar" Diesel No. 12 Motor Grader makes quick work of finishing the sub-grade on Patterson Field's runway extensions. *(Price of the standard model No. 12 is $9020, F.O.B. Peoria, subject to change without notice.)*

MORE ROOM FOR THE AIR GIANTS —WITH "CATERPILLAR"

SPEED FOR THE LONG HAULS — A rubber-tired "Caterpillar" DW10 Tractor heads for the fill with a fast-moving pay load.

At the U. S. Air Force's famed Patterson Field, Dayton, Ohio, they're ready to bring the nation's largest planes in for happy landings. Heavy bombers roar in on runways now extended to accommodate the biggest they've got.

This job was turned out smoothly and quickly with "Caterpillar" Diesel zoned equipment—rugged, easy-to-handle "Caterpillar" Diesel track-type Tractors for push-loading and short hauls, and DW10s, with scrapers and wagons, running fast on rubber for long hauls. All told, 23 pieces of "Caterpillar" Diesel equipment were used on the job — including Motor Graders.

For "lowest costs on earth," more and more contractors are using "Caterpillar" Diesel zoned equipment. Built for steady, day-in, day-out performance at lowest maintenance costs, "Caterpillar" Diesels give you rugged power, always ready for the tough jobs. And you get dealer service that has long been recognized as "the best in the business."

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL
ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

Refuse and Street Cleaning

Snow loaders like these will simplify winter problems in Chicago.

Chicago Mechanizes Snow-Removal Work

TO SOLVE the snow removal problem that has long plagued the nation's second largest city, the Chicago City Council recently purchased three mechanical snow loaders to speed the work and to cut its costs. The move followed a survey of 80 midwestern and eastern cities.

After several years of attempting to battle midwestern blizzards with hand shovels, Street Commissioner Lloyd M. Johnson appealed to Mayor Martin H. Kennelly for a committee investigation of the snow-removal problem. The committee made an extensive inquiry into snow-removal methods and equipment used by other cities in the snow belt area, and discovered that Chicago was the only city in the deep-snow zone that had failed to equip itself with time- and money-saving mechanical loaders. The success of the Athey Force-Feed loader in loading snow in such large cities as Detroit, Cleveland, Toronto, and Helena demonstrated the value of the machines in snow removal. The Force-Feed loaders purchased by the Chicago City Council will be concentrated in the Loop area during heavy blizzards; for lesser storms, two will be dispersed to the north and south side business areas respectively, traveling under their own power at 20 mph.

Snow Removal a Violation

WINNIPEG, Canada, so far as can be learned, is the only city in North America that has an ordinance which specifically forbids the householder to clean his sidewalk. Winnipeg plows all its sidewalks to a 5-foot width and can cover the entire city in an 8-hour period.

According to W. B. Hurst, city engineer, intermittent sidewalk cleaning by the householder has produced sufficient variations in the condition of the sidewalks during a snowstorm to make traveling hazardous for the pedestrian and has resulted in accidents that have lead to expensive lawsuits.

Mr. Hurst pointed this out during the recent meeting of the American Public Works Association held in Jacksonville, Florida.

Part-Time Refuse Disposal

THE operation of a sanitary fill is only a part-time job for the big International TD-9 crawler tractor with its Bucyrus-Erie dozer shovel at New Brighton, Pa. Borough Superintendent W. S. McDanel uses it not only for his work but also for grading, snow removal, cinder loading, and other municipal earth-moving jobs. The tractor needs to work only 3 hours a week to care for refuse-disposal operations.

The method of operation is to dig a pit 6 feet deep, 8 feet wide, and 40 feet long. The garbage is then dumped into the pit by city trucks and the tractor tamps it solidly and buries it.

The International TD-9 crawler tractor equipped with a Bucyrus-Erie dozer shovel is used by the borough of New Brighton, Pa., for garbage disposal by the sanitary fill method.

OPEN REFUSE FEEDS THIS Disease Carrier!

Protection from Disease Carriers Is a Major Advantage of the Dempster-Dumpster System of Bulk Rubbish Collection

Rats and flies feeding on open refuse are a health menace no progressive city can endure. That's why, in more and more cities, the sanitary Dempster-Dumpster system of bulk rubbish collection is being installed. Many depositories, which are actually large detachable truck bodies, are placed at convenient locations in business districts, housing sections, apartments and schools, in fact, everywhere that the volume of rubbish would constitute a major sanitation problem if left uncovered. Once the rubbish is placed inside and the convenient door closed, no rats or flies can contaminate it . . . no wind can scatter it.

Another great advantage of the Dempster-Dumpster System is the simple, low-cost manner in which the rubbish is collected. The Dempster-Dumpster Truck Hoisting Unit makes scheduled rounds, picks up each full body in turn, hauls it, dumps it and returns the empty to its original location. Shown at left are the three simple steps in handling a body. Top, truck hoisting unit prepares to pick up loaded body. Center, body in carrying position. Bottom, body is automatically dumped. One man, the driver, handles the entire operation from hydraulic controls in the cab. Help your city to cleaner, more efficient bulk rubbish collection by writing today for complete information.

DEMPSTER DUMPSTER
TRADE MARK REG.

DEMPSTER BROTHERS, Inc.

328 Springdale **Knoxville 17, Tennessee**

Sewerage and Sewage Treatment

Local Responsibility Is Not Enough

SO VIGOROUSLY has it been stated that sewage treatment is solely a local issue, or at best a regional issue, that we sometimes feel positively undemocratic to point out that sewage treatment improvements generally are not inspired by local initiative alone.

Modesto, Calif., is an example. With commendable aggressiveness, this community built its first sewage treatment plant back in 1910 to serve a population of 8,000. She rebuilt the plant in 1932 and again in 1938, a record with which, on the surface, no one could possibly find fault.

But in 1940 Modesto had a population of 16,000 with 5,000 in her "suburbs," and in 1946 she had a population of 24,000 with 15,000 in her adjacent areas. She had vigorous industries like wineries, milk condensers, meat-packing concerns, canneries, and frozen food plants which contributed wastes that made the Tuolumne River something less than a desirable and attractive stream.

Now the spur that brought the people of Modesto to correct this situation was not their own selfish desire for civic betterment. As a matter of fact, conditions were not too bad if you did not live in the downstream area of the city, because the troublesome wastes were collected and transferred beyond the limits of the city.

What made the difference was that Attorney General R. W. Kenny for the State of California brought a "big stick" suit against the city and its various manufacturers, ordering them to show cause why they should not be prohibited from dumping their sewage into the river.

No don't mistake us. This is no criticism of Modesto. A city government has a prior responsibility to its own people and has no right to spend their money unnecessarily. When Modesto was assured that the need was there and the state meant business, its people responded by approving a bond issue by a thumping majority of 11 to one.

The point is that the people cooperad once the rules were laid down, but those rules were not made locally. Through the risk of becoming tiresome we repeat these facts. Much dissatisfaction over the administration of sewage treatment arises because one community must treat its sewage to a high degree of purification while its neighbor does not have to. Reluctance to act arises because a community rarely treats sewage for its own benefit. It is the only service performed primarily for a downstream neighbor.

Communities generally are willing to provide treatment if the need is there. But someone beyond their borders must show that the need exists.

Two Consulting Engineers Honored by American Society of Civil Engineers

TWO consulting engineers, both active in their service to the municipal field, received awards by the American Society of Civil Engineers at its annual meeting held last month in New York City.

Thomas R. Camp, Boston consulting engineer, member of the firm of Camp, Dresser and McKee, was awarded the James R. Croes medal for a paper entitled, "Sedimentation and the Design of Settling Tanks." In 1941, Mr. Camp was the recipient of the Karl Emil Hilgard Hydraulic prize for a paper, "Lateral Spillway Channels," and in 1945 of the J. C. Stevens award for his discussion of the paper, "Effect of Turbulence on Sedimentation."

A. L. Genter, Baltimore, Md., consulting engineer, received the Rudolph Hering medal for his paper, "Computing Coagulant Requirements in Sludge Conditioning." Mr. Genter has a long record of work in the sewage-treatment field and is particularly known for his development of the elutriation process. In 1944, as a nominee of the Maryland-Delaware Water and Sewerage Association, Mr. Genter received the Kenneth Allen Award of the Federation of Sewage Works Association.

At the same meeting the Society named Richard E. Dougherty, vice-president of the New York Central System, as the new president. It named as vice-presidents Carlton S. Proctor, of New York City, and John W. Cunningham, of Portland, Oregon, both consulting engineers. Among the new directors are Joel D. Justin, consulting engineer of the firm of Justin and Courtney, Philadelphia; Julian Hinds, general manager of the Metropolitan Water District of Southern California, Los Angeles, and Col. Webster L. Benham, head of the Oklahoma City engineering firm bearing his name.

COURTESY RADIO-CRAFT MAGAZINE

"Calling cleaner No. 999! Proceed at once to 42nd Street and Vine — the circus parade is over. That is all!"

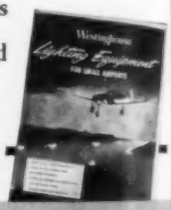
For Airports WESTINGHOUSE PLANNED LIGHTING PAYS!

here's why—

Today's progressive cities and communities need well-lighted airports to provide around-the-clock, on-schedule flying . . . to insure better personnel transportation facilities . . . to handle more freight and air express . . . to facilitate air mail deliveries and service. A well-lighted airport inspires civic pride and increases the importance of a community.

NEW ELEVATED MARKER LIGHTS . . .

are used as runway lights, strip lights, threshold lights and, under some conditions, taxi guidance lights. The Westinghouse Marker Light meets and exceeds CAA Specification L-802 . . . unique lens system gives nearly double the candle power required. It imparts full strength signals at all times, above the usual grass and weed line, and is visible night and day.



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Airports and Aviation

Midland, Mich., Airport Leads in CAA Program

ONE of the first airports on the list of those completed under the CAA Federal Aid program is the new Jack Barstow port at Midland, Mich. Mayor Karl B. Robertson recently accepted it in a ceremony that included L. D. Hale, district airport engineer of CAA, and W. A. Colby, assistant chief engineer of the Michigan Department of Aeronautics.

The airport is located on 285 acres of land a mile and a quarter north of the city limits. The runway layout follows a conventional 60-degree single-runway pattern consisting of three 2,000-foot runways with a central connecting taxiway system. All design is in accordance with standard CAA design criteria for a Class I airport, with provisions for future expansion to a Class II airport. All runways are sod. The taxiways are paved for a width of 25 feet with 6 inches of mechanically stabilized gravel-base course. The original plans provided for a 100-foot paved apron; but during construction a re-design of the apron was made that called for a 100-foot graded width of apron on which there are two 25-foot widths of 6-inch gravel base course which serve as outside lanes of the apron. This leaves a 50-foot width of sod parkway in the center. The base material saved by the re-design was used to pave six 25-foot taxiways extending from the apron into the hangar areas. The building area is served by a 40-foot access road, 24-foot base course, and 8-foot shoulders, leading off from a county road that parallels the south boundary of the airport.

Midland's new airport is designed and is to be used essentially for private flying. It is served commercially by the Tri-City Airport, which is located centrally in respect to Midland, Bay City, and Saginaw.

One unique feature of the airport project is the purchase by Midland County of 80 acres of land adjacent to the airport site for the development of a new fairground. The city and the county are working together in developing the airport and the fairgrounds in order that each will obtain mutual advantages through coordinated development and supplemental development activities. The fairgrounds are to be developed so they will protect the approach zones of runways. All areas of the combined fairground-airport site that are not necessary for the safe operation of the airport are to be developed for recreational purposes and parking during fair week. The airport administration building is to be developed jointly so it can be utilized by the fair as well as for airport purposes. All hangars are to be developed so they can be utilized as exhibition halls during the week of the fair.

Mayor Karl B. Robertson of Midland, Mich., accepts the city's Jack Barstow Airport from the contractor. Shown, left to right, are J. J. Lynch, airport engineer, CAA; Gerald Martini, Midland airport manager; S. E. Braswell, chief engineer, American Airport Engineering Co.; William Fisher, general superintendent, Fisher Sand & Gravel Co., presenting the completed airport to Mayor Robertson; John M. Biery, city manager; W. A. Colby, assistant chief engineer, State Department of Aeronautics; L. D. Hale, district airport engineer, CAA, and L. C. Andrews, airport engineer, CAA.

Construction operation consisted of clearing, grubbing, grading, drainage, seeding, fencing, and paving the apron, taxiways, and access road. Work started August 1, 1947, and was completed November 14, 1947. The project was financed by an $80,000 federal and state grant and $40,000 of city funds.

The Fisher Sand and Gravel Co., Midland, Mich., was responsible for construction. Terry and Stedman, Bay City, Mich., was sub-contractor on grading and seeding. Design and engineering supervision of construction was done by the American Airport Engineering Company, Columbus, Ohio.

Rochester Begins Airport Development Plans

WORK has begun on plans for developing the Rochester, N. Y., airport operated by the Board of County Supervisors of Monroe County. The work is a portion of the program for airports that is being developed with the aid of the Civil Aeronautics Administration and involves the construction of new taxiways, new administration area, new administration building and extensions to the present lighting system. The total estimated construction cost runs to approximately four and a half million dollars over a four-year period. Construction is to start in the spring.

The airport has been operated as a municipal function for many years. Only recently has the agreement been reached that Monroe County will build and operate the Rochester airport.

The work is under the direction of Seelye, Stevenson and Value, consulting engineers, New York City. Francis H. Carroll is County Engineer.

DELAYED ALARMS

CAUSE FIRE DISASTERS

WHEN FIRE OCCURS——PULL A FIRE ALARM BOX

IMMEDIATELY!

"It is generally recognized that there is no other thoroughly satisfactory means of sending and receiving fire alarms than an approved fire alarm telegraph system. Telephones should not be relied upon to replace needed boxes nor to supplement any inadequacy in number or location of boxes."

—National Fire Protection Association

DETAILED INFORMATION ON REQUEST

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NEWTON UPPER FALLS 64, MASSACHUSETTS

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Public Safety

Luminescent Belts Protect Traffic Officers

THE night-time traffic officer, dressed in his all-blue uniform, is a sure target on a foggy, rainy, or very dark night for a driver who can't distinguish the officer's dark outline from the night.

We have eliminated this hazard by equipping all of our night-time traffic officers with Acrolyte belts, made of a treated fabric which makes the belts luminescent and reflecting in the darkness. This good-looking gray and white belt, manufactured by the American Cord & Webbing Co., Inc., New York 13, N. Y., sharply reflects headlights, flashlights, or any other floodlight. After being exposed for ten minutes to one-half hour in any light, it glows brightly for hours in total darkness.

Our radio-car officers are also equipped with these belts, which they carry in their dashboard compartment. When they receive a call to assist traffic officers at an accident, the officers slip on their belts en route and are prepared to direct traffic when they arrive.

We use flares and warning lights, but I feel that this safety belt is an equally necessary piece of police equipment for all after-dark investigations.

J. A. BENNETT, Chief
Police Department
Riverside, Calif.

Lieut. Paul Stanley of the Riverview, Calif., police force wears a safety belt which is luminescent and reflecting at night, providing contrast to his dark uniform. All of Riverview's traffic officers have been equipped with these belts as a measure of protection.

More Cities Employ Policewomen

SOME interesting statistics on the increasing use of policewomen in large cities are cited by the International City Managers Association. There are now an estimated 1,000 policewomen employed by some 141 cities with over 25,000 population. New York City employs 174 "lady police"; Chicago, 79; Detroit, 60; Indianapolis, 56, and Washington, D. C., 35. Police matrons are not included in these figures.

Most policewomen are engaged in active law-enforcement duties, such as patrols and investigations. In 40 cities, they carry firearms as standard equipment; in 36 cities, they carry arms if they wish; in 45 cities, they are not armed. Policewomen in 95 cities are assigned to night duty as well as day duty. In 140 cities, they have official badges. Detroit's women police are taught ju jitsu.

Cities Strive to Curb Crime

MANY cities throughout the United States are starting 1948 with vigorous drives against crime. Among these are Boston, Chicago, Denver, Philadelphia, and Los Angeles.

In Boston, the police department has put into action a new "bandit squad" to stop Boston's current wave of stick-ups. Led by FBI-trained captains, a 57-man squad is working on a three-shift schedule to combat banditry.

In Chicago, where there have been some 450 robberies in 1947 as compared to 322 during 1946, more and larger detective squads are operating at night.

Denver also has been confronted with a recent wave of banditry. Police activity has been spurred by two of the largest holdups in Denver history.

Philadelphia's vice squad has been doubled in number to increase the effectiveness of raids on gambling and unlicensed liquor establishments. Five thousand policemen are working on Philadelphia's crime cleanup.

Los Angeles, San Francisco, and other California cities are cooperating intensively with the state's new drive against racketeering. California's governor recently held a conference of local law-enforcement officers for more frequent application of the state's conspiracy law to fight bookmaking, slot machines, gambling and prostitution.

Two Little Falls' Fire Fighting Veterans Retire

The old gives way to the new in Little Falls, N. Y., with the retirement of two faithful firefighters in that city: Fire Chief Edward J. Cooney and the department's 30-year-old, solid-tired Mack. Left to right are former Fire Chief Sullivan of Utica, who assisted in the reorganization of the local department, Fireman Clarence Smith (seated in the cab of the new model), Fire Chief Abram Swartz, retiring Fire Chief Cooney (in front of the old Mack), and, seated in the cab, Fireman Gordon Miller and Tippy, department mascot.

Adams advantages at work on great New York Thruway—

ON THE GREAT 485-mile New York Thruway—as on many big road-building projects—you will find Adams Motor Graders at work, their many operating advantages helping to complete the job on schedule . . . to exacting specifications—at minimum cost.

For example, Adams *Precision Mechanical Controls* provide fast, accurate blade and scarifier adjustments. *Balanced Weight Distribution* assures always-ample blade and scarifier pressures—even in hard materials. And Adams *8 Overlapping Forward Speeds* always provide exactly the right travel speed for performing each operation at the fastest practical rate.

These, and many other advantages, make Adams Motor Graders *Your Best Buy—All Ways.* Ask your local dealer for information.

ONLY ADAMS OFFERS ALL THESE OUTSTANDING ADVANTAGES

- 8 Overlapping Forward Speeds
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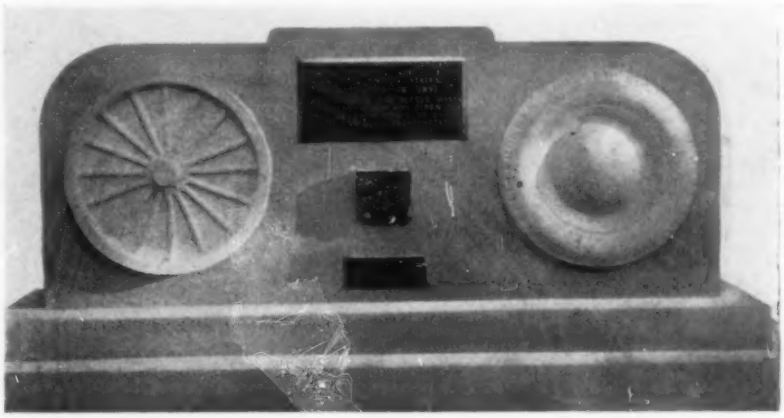
MOTOR GRADERS • LEANING WHEEL GRADERS • ELEVATING GRADERS

A 56-Year "Experiment"

During the years 1891 to 1894, Bellefontaine, Ohio, made a daring experimental move and surfaced its street in front of its Courthouse Square with concrete. As far as can be learned, this "experimental street" is still giving a good account of itself.

It was the horse rather than the car that encouraged this innovation in street-surfacing. High-spirited horses tied to hitching posts would paw the macadam surfacing to pieces in a matter of days. So in 1891, the officials of Bellefontaine built a strip of concrete 220 feet long and 10 feet wide along the hitching rack. This, they found, successfully resisted the pawing horses. During 1893 and 1894 they paved the rest of the street as well as the three other streets around the courthouse.

In that same decade, other cities followed Bellefontaine's experimental lead, and streets were surfaced with concrete in Watertown, N. Y., in 1894; Richmond, Ind., in 1896, and Detroit, Mich., in 1899. However, it was not until 1910 that a mile of road actually was built of concrete. This was laid in Wayne County, Mich.



Above: America's first street paved with portland cement concrete. Below: A tablet in Bellefontaine commemorating this development.

Skid-Resistant Surfacing

YOU CAN build skid resistance into your street surfacing by careful design, whether you use asphalt or portland cement concrete construction. T. E. Shelburne and R. L. Sheppe, research engineers of the Department of Highways in Virginia, told how it is done in a paper delivered before the 27th annual meeting of the Highway Research Board recently in Washington. The results were based on more than a thousand measurements of forward skidding on 32 different pavement surfaces. Four tire conditions were investigated, including synthetic and natural rubber, good tread and smooth or worn tires.

The tests showed that all pavements tested in a dry condition had satisfactory resistance to skidding for speeds of 40 miles per hour or less.

When tested wet, 27 of the 32 surfaces still had satisfactory non-skid characteristics.

Skidding resistance varies with the texture and composition of the pavement surface. Those surfaces having a harsh, gritty, sandpaper-like texture were found to have short stopping distances. Among these are the sand asphalt surfaces including 100% natural sand; 25% screened gravel, 75% sand; 100% trap-rock screenings. It also included a special plant-mix asphalt surfacing made of local sand and gravel and asphalt-surfacing seal treatment using a sand aggregate, and also a slag aggregate. It furthermore included a portland cement concrete with a broom finish.

Broom-finished portland cement concrete pavement was found to be much safer than belt-finished concrete. Stopping distances on dry broom-finished concrete are slightly longer than on dry belt-finished surfaces. On wet surfaces, however, the stopping distances for the belt-finished concrete was considerably higher than for broom-finished pavement, since the broom-finished surface allows water to drain off much more rapidly.

With plant-mixed sand asphalt containing stone screenings, the stopping distance at 40 miles per hour on a wet surface varied directly with the abrasion loss of the stone screenings, other factors being equal.

By treating the surfaces to give it non-skid characteristics, the research made it possible to reduce the stopping distances on wet surface from 224 to 94.5 feet at 40 miles per hour.

UP GOES YOUR FOOTAGE

DOWN COME YOUR COSTS

When your drills are protected against wear and rust with *Texaco Rock Drill Lubricants E. P.*

THERE is less work for the "drill doctor" when you keep drills in condition with *Texaco Rock Drill Lubricants E.P.* These fine "extreme pressure" lubricants have ample film strength to protect moving parts under even the severest conditions.

In addition, *Texaco Rock Drill Lubricants E.P.* resist oxidation, flow readily, and prevent rust whether drills are running or idle. Their use helps you drill more footage, assures less servicing, longer drill life.

Texaco Rock Drill Lubricants E.P. are approved by leading rock drill manufacturers. Use the viscosities recommended for your particular drills and operating conditions. And to keep your compressors efficient — valves clean, rings free, airlines clear — use the recommended *Texaco Alcaid, Algol or Ursa Oil.*

A Texaco Lubrication Engineer will gladly advise you. Just call the nearest of the more than 2500 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

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TUNE IN . . . TEXACO STAR THEATRE presents the TONY MARTIN SHOW every Wednesday night. • METROPOLITAN OPERA broadcasts every Saturday afternoon.

Stop—Check and Mail

Please note the free catalogs offered on this and following pages. To obtain the literature you want, write directly to the manufacturers, or circle the identifying numbers on this coupon and mail it to The American City Magazine, 470 Fourth Ave., New York 16. We will arrange to have the desired catalogs sent to you without expense or obligation.

2/48

399	400	401	402	403	404	405	406	407	408	409	410	411	412	413
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Name ..... Position .....

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Seven Types Of Sewer-Cleaning Units

399 The Turbine Sewer Machine Co., 5210 W. State St., Milwaukee, Wis., offers seven different power sewer-cleaning machines. Maxi-Power specifications are included in a catalog being offered by the company.

High-Pressure Utility Pump For Fog, Water Fire-Fighting

400 The Porto-Pumper is a little fire department in itself; it is a trailer unit that can be attached to a car, truck, or jeep, and which includes a Porto-Pump, supply and fire hose, a ladder, an axe, a hand extinguisher, and nozzles. A 200-gallon booster tank and fog and foam accessories may also be secured for the unit. For details, write Porto-Pump, Inc., 227 Iron St., Detroit 7, Mich.

New Developments In Sewage Treatment

401 Efficient sewage-sludge dewatering is one of the important phases in the treatment plant. The Eimco Corp., Salt Lake City 8, Utah, manufactures continuous vacuum dewatering equipment with a "Package-type" unit that includes all the necessary equipment for the operation of the dewatering unit; it comes mounted on a sub-base with wiring and piping completely ready to hook up to supply lines.

Reflective and Luminescent Belt For Patrolmen

402 The Acro-Lyte patrol belt is highly visible in the daytime and glows sharply in darkness, reflecting headlights or glowing luminescently in total darkness. For information about Acro-Lyte belts, gauntlets, or all-purpose strap and webbing by the foot, write the American Cord & Webbing Co., Inc., 374 Broadway, New York 13, N. Y.

Do You Know About These Water-Works Pumps?

403 Wintroath Pumps, Inc., Alhambra, Calif., has a new catalog describing its oil-lubricated vertical turbine pumps, which have full lubrication of line-shaft bearings by a built-in solenoid-controlled lubricator feeding uniform-temperatured oil to the line-shaft assembly when the pump is operating; when the pump is stopped, a thin film of oil adheres to every line-shaft and bearing surface, retarding corrosion and providing instant lubrication.

Salvage Covers For Fire Protection

404 Shuredry Green-Bak salvage covers in the hands of trained fire department personnel can save property owners from unnecessary loss from smoke and water. These covers overcome water penetration and seepage; they will neither stiffen in cold weather nor become tacky in the heat. For date, write the Fulton Bag & Cotton Mills, P. O. Box 1726, Atlanta 1, Ga.

Locate Water-Main Leaks Without Digging

405 Operating on the principles of a seismograph and stethoscope, the Globe Geophone can pick up the sound of a water leak when within 50 to 75 feet of the leak. For information on Globe's Geophone, pipe phones, pipe finders, and dipping needles, write Dept. Y., Globe Phone Mfg. Corp., Reading, Mass.

Rubber Traffic Signs In the Paving

406 The Sure-Stop Traffic Sign Co., Inc., 130 N. Oak St., Wichita 12, Kans., manufactures standard signs made of rubber that are installed in the middle of the street so that they are always visible, regardless of weather conditions. They are flexible enough so that cars can drive over them without damage and sturdy enough so that they always return to the upright position. Metal anchor plates and bolts hold the base firmly in the pavement, and refills may be installed easily.

One-Man Operation Of Bell-Joint Clamps

407 Skinner-Seal bell-joint clamps for stopping bell-and-spigot-joint leaks have a gasket which is completely sealed and protected by a Monel metal seal-band at the bell face and a hard vulcanized gasket tip acting as a plug at the spigot. Installation can be accomplished by a single operator. For information, write the M. B. Skinner Co., South Bend 21, Ind.

Saving Lives

408 Fire, police, and park departments are often called on to resuscitate victims of fires, drowning accidents, etc. Literature or a free demonstration of the Emerson resuscitator may be obtained from J. H. Emerson Company, Cottage Ave., Cambridge, Mass.

This Pavement Breaker Cuts Repair Costs

409 Small patchwork jobs can be done more economically with the use of a Rapid Pavement Breaker to break pavement quickly. For information about the models available, write the R. P. B. Corp., 1517 Santa Fe Ave., Los Angeles 21, Calif.

Advantages of Calcium Chloride For Ice Control

410 Calcium chloride, when used with abrasives for ice control, has been found efficient because it does not freeze in stock piles and does a more effective job of controlling skids than do abrasives alone. For information, write Solvay Sales Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

Snow Loader Does 15 Yards a Minute

411 The Haiss snow loader, with propeller blades that easily chop through hard and frozen snow, loads at the rate of 15 yards a minute. Another advantage that is of prime importance is its ability to move quickly from site to site. Information may be obtained from the George Haiss Mfg. Co., 140th St. and Park Ave., New York 51, N. Y.

Rubberized Sealing Compound Stops Street Blow-Ups

412 The most important advantage of Kork-Pak, for use as a joint sealing compound, is its high degree of resiliency. As a result, the danger of penetration of the seal by dirt, stones, and other incompressible material is reduced, and the possibility of blow-up when expansion takes place is greatly minimized. For literature describing this compound, write Servicised Products Corp., 6051 West 65th St., Chicago 38, Ill.

Make Your Own Concrete Pipe

413 The Quinn standard for concrete pipe and the Quinn heavy-duty pipe forms for making pipe by hand by wet or semi-dry processes, will produce tongue-and-groove or bell-end pipe in sizes from 12 to 84 inches in diameter. Information, prices, and estimates may be obtained by writing to the Quinn Wire & Iron Works, 1623 12th St., Boone, Iowa.

(Continued on Page 23)

MORE WORK-POWER

With owners and operators, it's Performance that Counts! The capacity of a Motor Grader is measured by the work it accomplishes.

Here's why the Allis-Chalmers AD Motor Grader more than meets their requirements:

TRAVEL SPEEDS smoothly synchronized with OPERATOR CONTROLS . . . all the needed power applied as required.

21,500 LBS. EFFECTIVE WEIGHT. Balanced for maximum traction and control.

FULL CIRCLE REVOLVING BLADE. Swings *ahead* of platform with plenty of end clearance.

FAMOUS 2-CYCLE DIESEL POWER. Dependable, economical, instant-starting.

BIG WORKING CLEARANCE. 28" throat clearance handles bigger windrows without interference.

"ROLL-AWAY" MOLDBOARD. Requires less power to handle bigger loads at faster speeds. Material is *rolled,* not pushed.

EXCLUSIVE TUBULAR FRAME. Strong, shock-absorbing, protects control rods inside frame.

ELECTRIC BRAKES. Control positive, operate with less effort than auto brakes.

Users appreciate these features that definitely lessen fatigue — that keep efficiency at a high level — that pay off in more work accomplished.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Stop—Check and Mail

Use Coupon on Page 21

Safety Breakable Hydrant Section Reduces Damage from Accidents

414 The Kennedy hydrant has a safety breakable section which gives way when struck a smashing blow, and the result is that essential working parts are left undamaged and the cost of repair is greatly reduced. For additional information about the Safetop hydrant, write The Kennedy Valve Mfg. Co., Elmira, N. Y.

Traffic Signal Lamps Have 4,000-Hour Rating

415 Duro Test lamps for use in traffic signal and police radio towers have an average life-length of 4,000 hours. This long expectancy rate means fewer interruptions in traffic signal operation, less cost for maintenance of traffic and radio towers. For information, write the Duro Test Corp., North Bergen, N. J.

Improved Earthmover

416 The Wooldridge Mfg. Co., Sunnyvale, Calif., manufactures high-speed self-propelled earthmovers with positive two-wheel hydraulic steering action and flexibly articulated oscillating kingpin pivot. The Terra-Cobra is described in Bulletin No. TA-750.

Electric and Manual Duplicators

417 The Mimeograph brand duplicator, manufactured by the A. B. Dick Co., Chicago 6, Ill., is available in electrically driven or hand-operated models. No special training is required of the operator, and the machine may be used for letters, forms, post cards, or folders in black and white or colors.

Supernatant Selector For Sewage Treatment

418 Bulletin 343, which describes the P. F. T. Supernatant Selector and Supernatant gage, sight-glass, and sampler for use in sludge-digestion tanks, may be obtained from the Pacific Flush-Tank Co., 4241 Ravenswood Ave., Chicago 13, Ill. By the use of these devices it is possible to obtain a consistent supernatant liquor containing suspended solids of about 500 ppm.

Remove Snow Completely

419 The Snogo throws snow away from the road or loads it directly into trucks. Cleaning down to the pavement and against curbs, the Snogo eliminates snarled traffic as well as discomfort to homeowners. For information, write the Klauer Mfg. Co., Dubuque, Iowa.

Diesel-Engine Bulletin

420 A new 28-page booklet, *Superior Stationary Diesel Engines*, may be obtained from the Superior Engines Division of The National Supply Co., Springfield, Ohio. In addition to photographs and specifications, the booklet describes the range of sizes and types that Superior produces.

Leak Detecting

421 For information about the Fisher M-Scope and leak detectors, by means of which underground pipe and cables and underground leaks may be detected without excavation, write the Joseph G. Pollard Co., Inc., 141 Ashland Place, Brooklyn 1, N. Y.

Rotary Scythe on Power Mower

422 The Whirlwind Corp., 3707 N. Richards St., Milwaukee 12, Wis., manufactures a power mower with a rotary scythe that provides suction-lift cutting action which can cut grass or weeds of any height. The clippings are mulchified by repeated slashing while they are carried in suspension in the cutting zone. The result is the elimination of raking or grass catching under normal conditions. For further information and literature, write Dept. AC 1-2, of the company.

Street Maintenance

423 The Model S tar kettle for street repair work, manufactured by Standard Steel Works, North Kansas City 16, Mo., is equipped with a motor-driven 10-gpm pumping unit and is available in sizes 80, 110, 165, 200, and 350 gallons. For information about this mechanism or about street flushers, engine- or traction-driven broom, pressure distributors, write the company.

A Tractor Loader That Works in Close Quarters

424 The Hough Payloader is designed for doing work easily in cramped quarters. Unusually high tractive ability results from large tires, and a wide variety of materials can be handled. Also available are a quickly attachable bulldozer blade and crane hook. For information about the Model HL 1-yard bucket, Model HF ¾-yard bucket, and Model HA 10½-cubic-foot bucket, write The Frank G. Hough Co., 710 Sunnyside Ave., Libertyville, Ill.

Long Lengths of Sewer Pipe Cut Installation Costs

425 Transite sewer pipe comes in 13-foot lengths; the result is decreased cost of installation and fewer joints. Another advantage is its light weight, which also decreases laying costs since many sizes can be lowered into a trench without heavy mechanical equipment. For information, write Johns-Manville, Box 290, New York 16, N. Y.

Two-Way Radio Saves Time, Saves Money

426 Two-way radio is effective in saving time and consequently money not only in the more dramatic instances of use by fire and police departments, but also in highway maintenance, water supply, health supervision, municipally owned transportation services. For information about this modern way of supervising a city's activities, write General Electric Co., Transmitter Div., Electronics Park, Syracuse, N. Y.

Silent Insurance Against Water Hammer

427 Whether your responsibilities are water supply or power generation, you should be informed about this rugged, silent-operating check valve. The manufacturer guarantees that the Williams-Hager silent check valve is tight under every condition of service and pressure, that it insures restricted and uninterrupted flow, and has the advantage of extremely low frictional resistance plus a very large internal streamlined area. You can get a folder describing it by writing the Williams Gauge Co., 1620-22-24 Pennsylvania Ave., Pittsburgh 12, Pa.

This Tractor Is a One-Man Maintenance Crew

428 The Traxcavator digs, grades, strips, and acts as a bulldozer. It is mounted on a Caterpillar track-type tractor, and is particularly useful for such jobs as road and street building and maintenance, pit and quarry work, stockpiling, snow-removal. For information, write the Trackson Co. Dept. AC-18, Milwaukee 1, Wis.

Water Treatment Problems Solved

429 If your city water is hard or impure, write to The Permutit Co., Dept. A-1, 330 West 42nd St., New York 18, N. Y., for information about its efficient water conditioning equipment.

Street Lighting Equipment

430 The Joslyn Mfg. and Supply Co., 20 North Wacker Drive, Chicago 6, Ill., is producing a new development for street lighting luminaires that provides a direct seal between glassware and reflectors without the use of gaskets. Distortion of the reflector due to latching pressure is eliminated, and the design permits relamping from the ground with a switch stick and lamp replacer. Additional information on street lighting equipment may be obtained by writing to the company.

One-Man Electric Chain Saw

431 The Homelite Corp., 101 Riverdale Ave., Port Chester, N. Y., is compact enough to be carried by one man. Powered by a Carryable Homelite High-Cycle gasoline-engine-driven generator, this 27-pound chain saw can be used for limbing, felling, bucking, and clearing with cuts flush to the ground. Write for new illustrated bulletin.

Work of a 5-Ton Tandem Accomplished by Portable Roller

432 The Trail-O-Roller can be trailed behind any truck to and from job sites; on the job it is as effective as a 5-ton tandem roller. It is made ready to trail or roll in two minutes by regulation of a patented hydraulic raising and lowering device. Write for Bulletin 3, Littleford Bros., Inc., 500 E. Pearl St., Cincinnati 2, Ohio.

A Good Generating System Saves Batteries

433 Overly frequent recharging of batteries or unnecessary limitation of accessories to safeguard batteries can be eliminated with efficient generating units. The Leece-Neville Co., Cleveland 14, Ohio, will send you information about its A.C. systems, available for 6-volt service and rated at 60 amperes and for 14-volt service at 100 amperes. Soon available will be a 12-volt system at 150 amperes.

This Street Equipment Has Economy Features

434 With the possibility of saving as much as 25% in gas and oil consumption through the use of new, efficient compressors rather than old, worn-out machines, also comes the advantage of securing cooler, cleaner, dried air and insurance against compressor breakdowns. For information concerning mixers, compressors, hoists, loaders, and paving equipment, write The Jaeger Machine Co., Columbus 16, Ohio.

(Continued on Page 25)

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Ryerson's function is not only to supply your steel, but to deliver it on time. From the moment the Ryerson switch-board flashes your incoming call until the steel is laid down in your plant, a corps of helpful, intelligent employees well-trained in the Ryerson "Immediate Steel" tradition are at your service.

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RYERSON STEEL

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The American City

Red Cross Aids Disaster-Struck Municipalities

By ELEANOR ADAMS

THE American Red Cross does not assume or infringe upon the responsibilities of governmental agencies, municipal, state, or federal. The organization was chartered by Congress nearly a half century ago "to continue and carry on a system of national and international relief in time of peace and to apply the same in mitigating the suffering caused by pestilence, famine, fire, flood, and other great national calamities, and to devise and carry on measures for preventing the same."

Through its network of 3,751 chapters across the nation, local Red Cross units are able to take immediate relief action and to call upon the national Red Cross organization for financial assistance, additional supplies, equipment, and personnel if the disaster is of major proportions. The American Red Cross spent $11,000,000 to assist 300,000 people toward recovery after 1947 disasters. Because of its semi-governmental status, the Red Cross also is able to obtain the use of governmental resources further to assist affected communities when necessary. The extent of these needs is determined by constant liaison between the Red Cross and municipal and state authorities.

Red Cross responsibility in disaster relief is to the persons affected by catastrophe. The organization thus assists in warning, voluntary evacuation, in moving personal property, and in rescue and first aid. Emergency care includes medical, nursing, and hospital care, and food, shelter, and clothing. Other Red Cross emergency services are transportation of disaster sufferers and of supplies and equipment; relief communications facilities, welfare inquiries, and surveys of family needs. In the long-term rehabilitation operation of the Red Cross to aid families who have no resources toward permanent recovery, assistance is based on actual needs and is an outright grant. Rehabilitation includes extended medical, nursing, and hospital care, rebuilding or repairing of homes, providing of household furnishings and of agricultural and other occupational aids, re-establishment of small businesses, and temporary maintenance.

Surplus Property For Disaster Relief

Municipal officials are reminded of the Aiken Act (PL 233), which authorizes grants, loans, and sales of surplus property to help alleviate damage, hardship, and suffering that cannot be handled by usual state, local, or voluntary forces of rescue.

The "Washington News Letter" of the American Municipal Association reports that if a disaster-struck city needs surplus loans or grants, it should phone or wire the Federal Works Agency at Washington, D. C. (Philip B. Fleming, Administrator. EXecutive 4900—ext. 4312), requesting a declaration of emergency. As soon as the emergency is declared (within hours, if the situation demands), the municipality can request and receive surplus items from the local division engineer of FWA's Bureau of Community Facilities.

Expendable surplus (medicines, bedding, lumber, tools, cement, pipe) may be transferred without charge. Shipping costs must be paid "except in unusual circumstances where the commissioner (of Community Facilities) may determine otherwise." The same applies to trucks, bulldozers, street machinery, etc., which are loaned. In fixing prices FWA must take into consideration "the available resources of the purchaser in the light of the damage inflicted by the disaster."

Typical Cases of Cooperation

Typical instance of Red Cross cooperation with municipal authorities during the past year's extensive disaster-relief operations was that at Gulfport, Miss., when the September hurricane and its accompanying rains lashed coastlines of the Gulf states after roaring over Florida. At conferences between Red Cross representatives, the mayor, the city engineer, and public health and public works officials, plans were made for meeting emergency relief problems and rehabilitation of affected families. The mayor proclaimed the Red Cross the official disaster-relief agency for coordinating disaster relief.

The mayor's office referred to the Red Cross all families applying for assistance, and the Red Cross, in turn, referred to municipal authorities problems which had to be handled by municipal departments. To refloat boats washed on to the beaches, the city engineer's office borrowed bulldozers and other needed equipment from a nearby

naval base which was in process of being dismantled. For families unable to pay the city for moving their boats back into the water so that their means of livelihood could be restored, the Red Cross met the cost.

At nearby Pass Christian, similar cooperation expedited relief to stricken families. The mayor announced the Red Cross as the official disaster-relief agency and referred all families needing aid to Red Cross workers on the scene. While families temporarily homeless were fed, clothed, and housed in shelters opened by the Red Cross, the city highway department cleared roads of debris and the city government provided manpower to the Red Cross for clearing uprooted trees and debris from private property with heavy equipment lent to the city by the Federal Works Agency. The mayor of Pass Christian designated one of the town's schools as Red Cross disaster-relief headquarters. The city fire department provided trucks for emergency Red Cross transportation.

These examples of Red Cross-municipal cooperative relief programs are not exceptional; they are the rule. Similar cooperative relief procedures were used at Woodward, Okla., where the worst tornado in 10 years leveled most of the town in April 1947; in mid-Western river towns where severe floods caused heavy damage in four states in June; in Texas City in the long-term relief and rehabilitation program following the terrific explosions of mid-April, and in Maine after the devastating New England forest fires in October. Statements and reports from mayors, city councilmen, selectmen, chambers of commerce, and governors in those areas all attest to the practicability of these working arrangements.

Advance Plans Desirable

Many of the municipalities struck by catastrophe during 1947 had advance disaster plans that expedited relief measures and reduced casualty tolls and property losses. In hundreds of communities, American Red Cross chapters cooperating with municipal authorities have initiated preparedness measures as a community service and have prepared written plans for cooperation and procedures. These plans include provisions for survey of disaster hazards or damage and for warning, rescue, evacuation, medical aid, shelter, feeding, clothing, transportation, communications, registration - information, purchase-supply, and public information.

Vienna's Struggle for Recovery

By DR. ING. F. MUSIL
Vienna

This graphic picture, by the former City Engineer of Vienna, of the wartime ruin of that city and of the desperate need for rehabilitation, is all too typical, of course, of conditions in many other cities in Europe and the Far East.

We of the United States cannot rebuild the world—but can there be any doubt that intelligent generosity to our wartime allies and enemies can do much to strengthen the United Nations and to advance the cause of permanent peace?

IN MARCH 1945, the havoc wrought by the fighting forces in Vienna left chaos, ruin, and devastation in its wake. Almost every factor in civilized living was weakened or wrecked.

Gas and electricity were cut off; there were no street lighting, telephone or other public services. The water supply was ruined, and food became scarce.

Ten days and nights of artillery fire and 52 air raids left the city a shambles. Completely destroyed were 37,807 tenement buildings, comprising 86,875 flats; 3,723 factories and office buildings, as well as 4,332 other structures, including all railroad terminals and dozens of well-known public edifices, such as the opera house and St. Stefans Cathedral. The thoroughly equipped and fully manned fire fighting force was crippled and helpless to cope with the situation.

During that summer the streets were filled with debris and rubble, making traffic a difficult if not impossible problem. Bombs ripped up 4,536 holes in the streets, necessitating the repavement of millions of square feet.

With one exception, all the bridges across the Danube were blown up. Over one branch of the river, flowing through the business center, all the bridges—13 in number—were demolished. Reconstruction of these bridges presented one of the most urgent and difficult tasks.

A great many of the 517 public parks, stretching over wide areas, were defaced. The parks were used as garbage-dumping grounds, there being no means of collecting refuse. Motor vehicles disappeared and only 40 trucks remained in operation to serve the needs of a city with a population of 1,600,000.

These once beautiful parks were also used as burial grounds for hundreds of soldiers.

Rehabilitation Begun

The sewer system, hit by hundreds of bombs, is now functioning again.

Prior to the war, Vienna drew its drinking water from the Alps through two pipelines of about 200 miles in length. Both were heavily damaged, the distribution system showing 3,580 breaks. Today the system is repaired and once again in use.

Austria is endeavoring to develop the water power of the Alps and is pushing the electrification of main lines of railroads. Steam railroads are now in use, but with only a few trains running. The number of passengers carried is only one-third as compared to 1938.

The close of the war saw the destruction of a majority of the 68 municipally owned bathing projects, which include 3 swimming pools, 27 steam baths, 16 summer bathing pools, and 22 wading pools for children. Forty-four of these bathing facilities have now been restored and in 1946 had an attendance of 5,700,000.

Destruction of buildings during the war, combined with the commandeering of thousands of flats by the military occupational forces, resulted in a dire housing shortage. Reconstruction is greatly hindered and fraught with difficulties, owing to lack of labor and building materials, such as cement, bricks, tiles, lime, steel, and glass. Two and a half years after the cessation of hostilities, thousands of windows are still without panes, and hundreds of buildings have defective roofs.

Austria has no coal fields of her own to speak of, and, of course, at present no coal is coming in from outside sources. This lack is felt in the production of electricity, gas, tar, and other essentials. Lack of concrete mixers, compressor plants, truck, derricks, steam shovels, locomotives, steam rollers, rails, and motors is also serious.

At present Vienna is able to do only patching and mending. With the exception of a few sheds for the Fair, no new buildings have been erected.

A skeleton of her former robust, healthy self, Vienna is struggling for recovery — but progress cannot be achieved without outside help.

By WILLIAM S. FOSTER
Engineering Editor

. . The American City reviews the record to answer questions most frequently raised on this development in municipal sanitation.

Ground Garbage

What is its effect on the sewerage system?

? Will the flows from household garbage grinders be so large that they will overload a sewer system?

They should not. Rudolfs estimates that the grinders will increase the sewage flow possibly 1% and not over 2%. Cohn places the unit use of water from a grinder at one gallon per capita per day.[1, 2] When one matches this against an estimated 75 gallons per capita of sewage from each home, one can see that the increased quantity of sewage is no particular problem.

? Isn't it true that ground garbage is hard to treat? Won't it produce a heavy and erratic oxygen demand in the sewage that will upset the treatment plant?

It is true that the ground garbage will increase the oxygen demand. The increase probably will be around 30% if the city's entire output of garbage finds its way into the sewer. However, opinions differ. Keefer feels that the increase would be 10% to 25% with 15% to 20% boost in the raw sewage from primary tanks.[3] Rudolfs and Ingals have expressed the opinion that this increase is more readily oxidized than is similar material in sewage.[4] Tolman has placed the increase at 0.038 to 0.065 pounds per capita. Fuhrman substantiates this in analyzing potential Washington, D. C., sewerage-garbage problems by estimating that this added contribution would be no more than 0.035 pounds.[5, 6] These figures will help us answer this question. Let's look at them closely.

For calculation purposes, let us place the BOD load from the garbage at a liberal estimate of 0.05 pounds per capita. Then let us match it against a per capita contribution from domestic sewage of some well-recognized average figure of, for example, 0.17 pounds. Using these, we get a *maximum* increase of only 30% if everyone in town used a garbage grinder and garbage collection as such was completely abandoned.

This is a significant increase, but the sanitary-engineering profession certainly should be able to meet it handily. Operators continually find themselves faced with peak loads greater than this.

? What about the solids you have to handle? How would they affect your settling basins? Would their design have to be changed?

The volume of solids to be handled would indeed be greater; however, the settling tank capacity would remain unchanged.

Some authorities have adopted the rule of thumb that the solids to be handled would be doubled if all a community's garbage were ground and introduced to the sewer. Published data in the literature do not verify this. Tolman places the contribution from suspended solids at a figure varying from 0.07 to 0.11 pounds per capita per day.[5] If we take the upper limit of 0.11 pounds and match it against an average figure of 0.20 pounds daily as the per capita contribution in domestic sewage, we get about 55% more suspended solids added that the plant would have to handle.

The question then arises whether this would mean more settling-tank capacity. It should not. Settling tanks are designed to hold a fixed *volume* of sewage for a stated interval, during which time suspended solids are allowed to settle. The laws of gravitation work impartially on one or a million suspended particles in the sewage. You would have to draw more sludge—55% more.

Rudolfs has recorded that sedimentation actually will be improved. However, some of the lighter material will float and more scum is to be expected.[2]

? What would this mean in digestion tank capacity? On what figures would you base their design if the use of grinders becomes widespread?

To answer this, let us look at some typical plants that receive their communities' garbage in central grinding stations attached to the plants.

Taylor designed the Goshen, N. Y., primary treatment plant with a digester capacity of 4 feet per capita and gets good operation.[7] Backmeyer has been operating the Marion, Ind., activated-sludge plant with 4.2 cubic feet per capita, translating the industrial load into equivalent population. However, he wants to boost this to 5.2 in order to get the full yield of gas from the sludge.[8] Tolman feels that a plant should have a digestion capacity of 5 cubic feet per capita for primary solids and garbage, and 9 cubic feet per capita for secondary solids plus garbage.[5]

These figures compare with the figures of 2 cubic feet per capita for primary-treatment plants and 5 to 6 cubic feet per capita for plants that use the activated-sludge process but do not handle ground garbage. Thus it is true that you probably will have to add from 60% to 100% more digestion capacity if all your community's garbage is ground and put into the sewer.

? Then is it true that the added digesters required represent a distinct economic liability to the system that should be charged against the grinding operation?

They certainly do not represent a liability. The use of digester gas has become so common now that it is virtually a classical procedure. Backmeyer's studies in Marion, Ind., indicate that garbage digested separately will produce roughly 13 cubic feet of gas per pound of volatile solids. He compared this with 8-10 cubic feet yielded by sludge containing no garbage.[9]

If gas production is a factor—if your plant requires power to operate and can use power furnished by engines burning this gas—then this additional sludge brings a definite benefit.

? Won't this added ground garbage shoal in the sewers and clog them? Isn't it true that you will have to anticipate more maintenance problems?

Fear of this contingency hangs on persistently despite the lack of evidence to support its validity. Therefore, let us consider a definitely bad situation. The conventional figure for garbage contribution is 0.5 pounds per capita per day, averaging 70% to 90% moisture.[3] In view of the vagaries in garbage pro-

duction, let us assume a garbage contribution of 1 pound per capita at the low moisture range of 70%. To make the work easier, let us assume that the ground garbage has a specific gravity of one, making its weight equal to water. Since the literature mentions that the household grinder will use water at a minimum rate of 1 gallon per capita, it is not difficult to calculate the amount of solids in the mixture. One pound of garbage, therefore, has 0.3 pounds of solids and 0.7 pounds of water in itself, and has added to it 8.3 pounds of water. The slide rule, therefore, tells us that the combined mixture is 96.7% moisture, and experience with sludge indicates that this ought to flow in a pipeline, admittedly not fast, even if nothing else were added to it.

However, as soon as the mixture leaves the household sewer-service lines it empties into the municipality's sewer that carries sewage that is at least 99.5% water content. Since the garbage mixture is no more than 2% of the total sewage volume, the additional solids-load on the sewage flow would be less than .1%, which would scarcely affect the flow of the sewage at all. If ground garbage causes any difficulty, it will be in the household plumbing fixtures and not the city's sewers.

The possibility of clogging in household fixtures is remote, however. The grinders are used only intermittently, and the household plumbing has ample opportunity to be flushed clear by the water used in other household activities.

This example, of course, has many flaws. Obviously much of the garbage will be heavier than water. Furthermore, as Dr. Rudolfs has already shown, ground garbage apparently settles faster than ordinary solids.

Nevertheless, standard sewer-design practice calls for flows safely above 1.5-2 feet per second, which will even carry inorganic material like sand. Therefore, one should not expect trouble except possibly in wet wells, sumps, or possibly in flat sewers that were poorly designed in the first place and should be corrected.

? *Then anything that can be put through the grinder should be carried away by the sewage flow?*

This is true so far as we know today, with one exception. Harold Kemp, Director of Sanitary Engineering for Washington, D. C., reports that ground seashells break into flat, flaky segments, drop immediately to the bottom of the sewer, and cannot be dislodged even with flows as high as four to five feet per second. This has been the experience at certain restaurants specializing in fish food and using grinders to dispose of the waste food. Mr. Kemp's recommendation is that city ordinances forbid the disposal of oyster and clam shells and similar material in the grinders. Here again he points out that the difficulty would arise, if violations of the ordinance occurred, in the householder's or restaurant operator's service line before it would in the municipality's sewer system.

? *What size should the garbage particles be after leaving the grinder in order to be considered "ground"?*

This is a point on which the literature does not offer a great deal. In a recent study of the problem, however, the District of Columbia arrived at some sizes that should offer guidance. In the opinion of the Sanitation Department, the grinders may be considered to be operating satisfactorily if 100% of the ground material will pass a sieve with $\frac{3}{8}$-inch mesh, and if 75% will pass a $\frac{1}{4}$-inch sieve. Long shreds of garbage appeared to be only a minor difficulty, since in general the physical strength of garbage fragments is low.

? *Is there any justification for traps in the household line to catch the ground garbage and prevent its entering the sewer?*

There is none. Actually, the traps constitute an odorous nuisance that may be a potential public-health hazard. The use of the traps is one of the ridiculous bars that municipal officials frequently put in the way of conveniences to the people they serve, such as those that appeared a half century ago limiting the use of bathtubs because of their potential damage to the water supply system.

? *How can one arrive at the added cost that grinders impose on a sewerage system?*

Various authorities have estimated this cost. Schroepfer has estimated that it would increase the treatment cost approximately 30%, or roughly 11 cents per person per year if every family in the Minneapolis-St. Paul area had grinders.[10] His figures are based on a garbage contribution of 0.5 pounds per capita daily. If one carries this further and puts it on a cost-per-ton basis, his figures would run to 1.16 per ton. This coincides remarkably with incineration operation costs from large cities around the country. Since the St. Paul-Minneapolis plant incinerates raw sludge without digestion, one cannot be surprised at the comparison. It should be pointed out that the system saves the hand collection of 188 pounds of garbage per year per person, since water carriage rather than trucks brings the garbage to the plant. Since the collection costs generally run at least 200% greater than the disposal costs, the over-all saving to the householder would more than offset the added treat-

What Ground Garbage Will Do to a Sewer System

1. It is not a factor in sewage volume. It can contribute roughly 1 gallon of sewage per capita daily, or not over 2% of the daily flow.
2. No evidence exists indicating that it will cause trouble in a well-designed sewer.

   It probably will aggravate difficulties in a sewer system's weak points, such as pumps and wet wells, but should be carried without difficulty in properly designed sewers.
3. It will add at least a 30% oxygen demand to the sewage. The per-capita contribution has been estimated at 0.05 pounds.
1. It will add at least 50% more suspended solids to the sewage. The per-capita addition probably will vary between 0.07 and 0.11 pounds per day.
5. It will require added digester capacity. This probably will approximate roughly 3 cubic feet per capita of digester capacity for garbage added at the rate of 2 tons per million gallons of sewage.
6. This additional garbage will increase digester-gas production from 50% to 100%.
7. The cost of handling garbage in this way varies from $.70 to $1.20 per ton, discounting possible savings from using gas.

The material in this article was delivered as a paper before the Washington, D. C., Sanitation Conference on Jan. 7. The suggestions made by members were most helpful.

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ment costs involved by the introduction of garbage into the sewers.

In a recent study, Fuhrman has estimated that the added cost of garbage treatment in the sewage-treatment plant at Washington, D. C., would run to a figure ranging between $0.87 to $1.20 per ton, corresponding to or somewhat less than the Minneapolis-St. Paul figures.[6]

Actual operations in plants treating garbage and sewage show somewhat better figures. Without taking into account the value of the gas generated, the cost of disposing of the garbage at Findlay, Ohio, is only $0.86 per ton. At Marion, Ind., the cost, without credit for the gas, has run to $0.68 per ton.[5]

Would garbage grinders seriously affect the operation of other refuse-disposal activities?

It would reduce their costs. For sanitary reasons, most cities key their refuse-collection programs to the collection of the garbage portion because these wastes create objectionable nuisances. Customary collection practices call for a schedule of two or three collections a week in summer, with possibly only one a week in winter in the colder regions. Certain southern cities, such as New Orleans, collect garbage daily in order to minimize any nuisance attached to them. Paper, ashes, and other trash can be collected on a once-a-week schedule without involving an odor factor. Thus, if your people all used grinders to dispose of garbage, you could reduce collections to a once-a-week basis and still furnish a service above criticism.

It would also reduce the cost of operating incinerators since it would remove the element in the refuse that is difficult to burn.

Do the grinders at the sewage treatment plant introduce any specialized operating problems?

In effect, they produce a shock load if the garbage is combined directly with the sewage. In certain types of plants, such as those using activated sludge for secondary treatment, it does cause difficulty in the secondary settling tanks.[8] These problems can be avoided handily by grinding the garbage in a separate well and pumping it directly to the digesters.

How will a central grinding station affect a sewerage system and sewage treatment plants?

We can answer this by examining activities in certain cities that use them. St. Louis is one. This city has no sewage-treatment plant, and consequently the treatment costs are not a factor. However, it is able to cut collection costs by placing the grinding station in a relatively central location and avoiding the long haul to a disposal facility beyond the city limits.

Marion, Ind., Lansing, Mich., Goshen, N. Y., and Findlay, Ohio, have grinding stations at their sewage-treatment plants. Here the hauling cost to the plant is not a factor, but the engineers who designed them feel that the advantage gained by increasing the gas production is economically important.

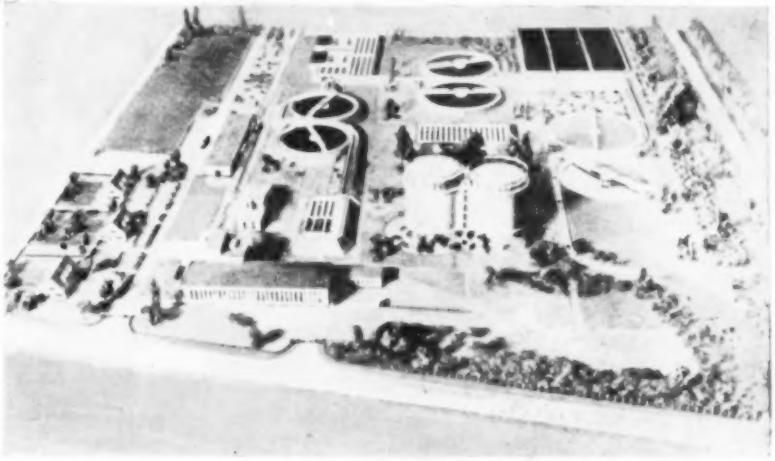


PHOTO BY DR. A. J. FISCHER, THE DORR CO.

The Niers, Germany, sewage treatment plant.

Chemical Coagulant Substitute

A GERMAN-DEVELOPED substitute for the use of iron salts customarily used in the chemical-precipitation process of sewage treatment has recently been reported on in some detail by the Department of Commerce Office of Technical Services, Washington, D. C. The report, No. 1005, delivered by Dr. George Ornsen, consulting sanitary engineer of New York City, covers the method developed by Dr. H. Jung, German sanitary engineer, of treating a strong sewage carrying a heavy concentration of trade wastes.

The plant serves the Niers River District. It receives wastes of textile mills, bleacheries, dye works, tanneries, and paper and straw mills. The concentration and composition of these effluents, with a volume of 7½ mgd, gives a load equal to domestic sewage from 600,000 people. Thus the 12.5 mgd of sewage corresponds in degree of pollution to a total of 20 mgd of domestic sewage. The average flow of the Niers River amounts to only 21.6 mgd—the treatment afforded has to be thorough.

Early tests indicated that chemical precipitation combined with biological treatment of the effluent by the activated-sludge process would produce a satisfactory effluent. The cost of the iron salts used in the process was so high, however, that it made the process prohibitive. Dr. Jung developed a method of producing the ferrous floc from relatively cheap iron filings. He was able, furthermore, to reduce the cost still further by recovering about 60% of the iron from the sludge and using it again.

The plant receives an alkaline sewage, with a pH ranging between 8 and 9. At this figure, the sewage is difficult to treat, either by chemical or biological means. Dr. Jung recarbonates it by using boiler-plant stack gases, reducing the pH to somewhat more than 6, and at the same time supplying the sewage with an excess of carbon dioxide that can react with the iron filings.

Following this recarbonation, Dr. Jung introduces the sludge with its iron content, along with ferric hydroxide floc produced from the iron filings at a later stage in the treatment.

The ferric hydroxide floc is developed after the primary mixing and settling stage. The sewage, still containing an excess of carbon dioxide, is mixed with the iron filings in a propeller-powered upflow type of mixing chamber. Here the sewage reacts with iron in a period of five minutes, and does so without the resulting loss of pH generally associated with the reaction when alum or iron salts are used.

In treating the Niers sewage, 10,000 gallons of sewage require the addition of 1.2 to 2.0 pounds of metallic iron, or about 15 to 25 ppm. The balance of the total requirements of around 50 ppm is made up by the iron recovered from the sludge of the reduction tank.

Tacoma's New Recreation Commission

As part of the joint summer playground program, a naturalist from the Metropolitan Park Board displays some of his mobile collection of animals and reptiles.

An instructor employed by the Recreation Commission and paid by the Metropolitan Park Board teaches swimming during the summer in a high-school pool.

SINCE public recreation became accepted as a legitimate and necessary function of municipal government several decades ago, specialists in administration have pondered and charted in vain to create an ideal form of organization.

Try as they might, the experts simply have not been able to solve the problem of bringing all of the facilities necessary for a comprehensive public recreation program into the complete legal and financial jurisdiction of one agency.

Recreation, unlike other public services, must use the facilities and occasionally the personnel of strikingly different governmental departments and units. The difficulty arises in the relation between the school systems, the park systems, and the municipal recreation departments. Each of these agencies must contribute to the total public recreation program if the program is to be successful. In every municipality in the country some of the playgrounds are on school property, some on park property. Evening centers are sometimes conducted in school buildings, sometimes in community centers owned by the park department or other divisions of the city government.

This is the situation that confronts the person who seeks to pencil neatly the lines of authority in a municipal recreation program. In every case, the problem is to bring together the different groups which must necessarily be a part of the municipal recreation program. Most organizational schemes in operation today place major control in the hands of the schools, or the parks, or a recreation commission. Usually, the facilities of the other agencies involved in public recreation must be "borrowed" or rented for recreational purposes.

Steps to Solve Problem

A distinctive type of organization with joint school-park responsibility has developed in Tacoma, Wash., at the suggestion of the Community Council (Council of Social Agencies). Before 1944, the schools and parks provided recreational opportunities separately and with only occasional informal reference to each other. In 1944, the Tacoma Community Council recommended that a coordinated year-round recreation program using the maximum facilities of both the schools and parks be inaugurated "to the end that young people can find outlets for their energies that will insure good character development and a high caliber of citizenship in future years."

The park board and school board members concurred with the Community Council in the following measures to implement this recommendation:

1. A Director of Recreation should be jointly employed by school and park districts.
2. School facilities and custodial per-

City solves coordination problems by setting up joint park-school-recreation department program

By THOMAS W. LANTZ
Superintendent of Public Recreation
Tacoma, Wash.

A valuable part of the program are the evening teen-age centers, conducted on school and park property under the supervision of the Recreation Commission.

Finishing touches are applied to an inlaid table in one of the adult centers conducted by Commission in school buildings and Park Board Community Centers.

sonnel should be made available for recreation activities best carried out on school properties.

3. The program should evolve gradually over a period of time, in order that each activity begun will be of real value and as a direct outgrowth of neighborhood and district needs.
4. The Tacoma Recreation Commission, to be established, should be composed of two members from both the school and park boards and three members from the Community Council to advise and guide the Director of Recreation.

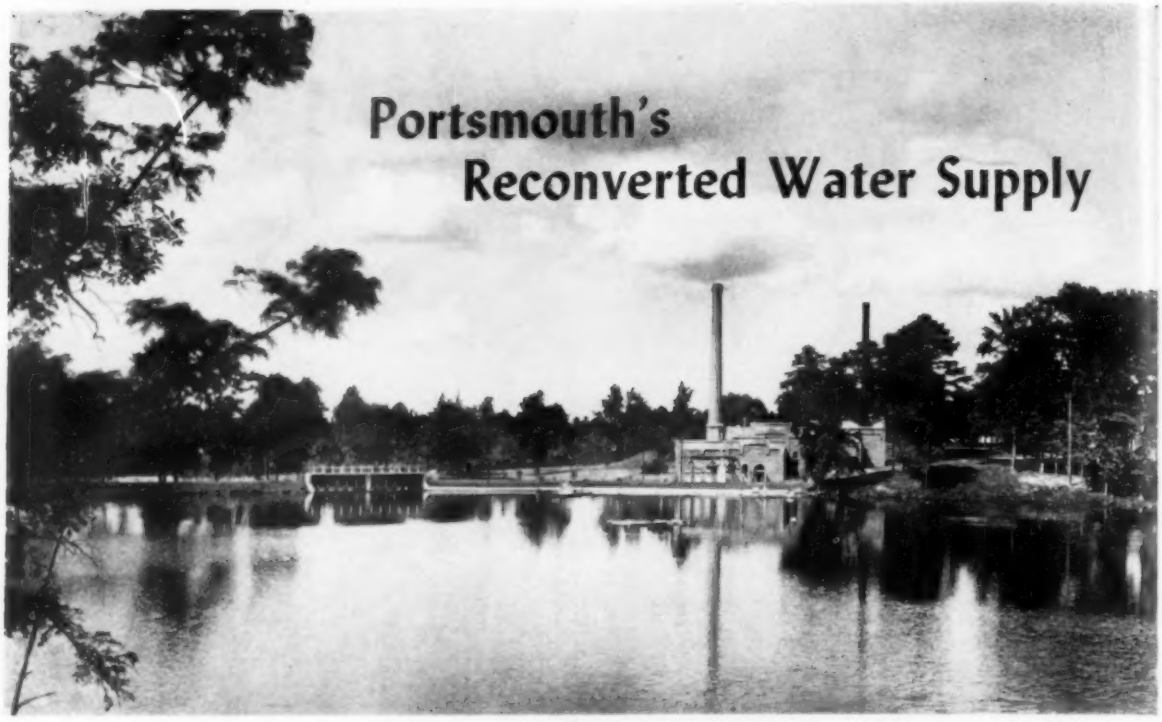
An unusual feature of Tacoma's organization is the separate identity of the Metropolitan Park Board, with no legal or financial tie with the city government. State enabling legislation permits the organization of metropolitan park districts with a separate levy of three mills. Park commissioners are elected by the public. Final authority for the control of recreation facilities and programs rests in each case with the school board and park board. Funds for the operation of school facilities are appropriated by the school board, and for park properties by the park board.

The Tacoma Recreation Commission, an extra-legal organization, now serves as the coordinating agency that brings together these separate units of government and smooths the operation of the joint park-school plan. As it includes two members from both the Metropolitan Park Board and the Tacoma School Board, policies recommended by the Commission generally are accepted by the two appropriating agencies. Additional weight is added to the conclusions of the Commission through the participation of the three members from the Community Council.

Summer playgrounds are operated on both school and park property, with the Recreation Commission, through its representative, the Superintendent of Recreation and his assistants, in complete charge. During the school year the school buildings are available for community use whenever the usual school activities do not conflict. It is thus possible for the Superintendent of Recreation to schedule all kinds of recreation activities on either school or park property on the basis of community needs. Community groups clear through the Recreation Commission office for the use of facilities.

In the final analysis the effectiveness of a municipal recreation system is measured in terms of the program made available to the community. Professionally trained, paid recreation workers under the Superintendent of Recreation now provide a year-round schedule of playground activities, indoor centers for youth and adults, and organized athletic leagues. Expansion from a budget of $20,000 in 1943 to a combined park-school budget of approximately $110,000 in 1948 testifies to the success of our recreation organization.

Portsmouth's Reconverted Water Supply



Portsmouth entered the war period with this steam-powered 12-mgd pumping station and filter plant.

By X. D. MURDEN
Superintendent, Water Department
Portsmouth, Va.

IF WE DARE to paraphrase an old, somewhat corny saying, we can offer the observation that the Portsmouth Water Department ain't what she used to be. This is somewhat misleading, since it generally means that whatever we are talking about has gone downhill. Actually, the Portsmouth Water Department is stronger today than it ever has been in previous history, and the trials of war made it so.

Like a lot of men we know, the department got caught in the draft, was worked to a frazzle during its wartime indoctrination, but gradually was built up so that today it is 50% to 100% bigger and stronger in many respects than it was during the peaceful prewar days. It came out of the war with a shiny new filter plant and many improvements to the supply and distribution system, and with appreciation of the cooperativeness of Uncle Sam's Navy.

Acquired After Last War

Significantly enough, the last major upheaval in water works operation occurred in 1919 at the close of World War I. At this time Portsmouth exercised its option to purchase the system at its appraisal value of $2.8 million. The system had two possible sources of raw water: Lake Kilby in Suffolk and Nansemond Counties, and Lake Cahoon in Nansemond County. The two have a watershed of roughly 50 square miles. There was a 12-mgd filter plant on Lake Kilby and a pumping station with a transmission main from Lake Cahoon. From 1919 to 1939 we operated as usual, with only normal growth and increased water use. During 1932 we modernized the Lake Kilby plant, installing electrically driven centrifugal pumps with standby gasoline engines. In 1938 we installed the same type of equipment at the Lake Cahoon pumping station. With this we thought we were safe. Our figures indicated that 4- to 5-mgd would be sufficient for any normal operation, and we averaged only about three.

From then on, as we all know, world events started calling the turn in our water operation. As the use of water increased, we began to increase and found it necessary to boost the supply of raw water. We had a 30-inch wood main and two 20-inch cast iron mains connecting the filter plant in Suffolk with the distribution system in Portsmouth, 19 miles away. The wood-stave main was giving much trouble because of deterioration. During 1938 we had made an effort to get it replaced with WPA funds, but did not succeed. In 1941, however, the government stepped in and helped us replace it with 69,000 feet of 30-inch Lock Joint prestressed concrete pipe. During this same period we saw our annual pumpage jump from 1,643 million gallons to 2,542 million gallons. While this supply-line concentration was proceeding, the demand on our pumping stations exceeded the supply, except for weekends. By working full tilt over weekends, we were able to refill the limited storage basins.

In order to curtail the pumpage from the Portsmouth station, we reduced the pressure as much as was consistent with safety, reaching a low of 30 pounds during the night, when basins were low.

This reduction in pressure was made possible by the cooperation of the Navy Department, and resulted in a decrease of 0.5 mgd for each 5-pound drop in pressure.

Lines Cleaned to Boost Capacity

Again, in 1941, the government stepped into the picture to put other portions of our system on a true war footing. Under the terms of the Lanham Act, the Federal Works Agency assisted us in the following improvements:

Erection of two elevated storage tanks of 5-mg capacity, erected by Pittsburgh-Des Moines Steel Co.

Addition of pumping capacity involving three pumps, a 9-, an 8-, and a 6-mgd with generators; DeLaval pumps; G-E generators with Buffalo gasoline engines, all furnished and installed by the Dravo Corp.

Thirty-six miles of transmission main cleaning by National Water Main Cleaning Company, New York, N. Y.

The cleaning of the transmission mains increased the pumping capacity sufficiently to meet the demands until the new pumping equipment could be installed.

New Filter Plant Built

In 1942, Portsmouth retained the firm of Greeley and Hansen to design a filtration plant, reservoir, additional transmission mains, and other smaller items. This project was estimated to cost $835,000, of which $200,000 was contributed by the city. Actually, the cost ran approximately 15% over this estimate. The improvements include:

A 6-mgd filtration plant — International controls, Wheeler bottoms, Mueller hydraulic valves, and Builders-Providence and Simplex Valve and Meter Co. equipment.

A 2-mg storage basin at the Lake Kilby plant.

A 4-mg storage basin at the Lake Cahoon pumping station.

A 24-inch cast iron transmission line, totaling 17,100 feet.

Other miscellaneous items.

The year 1942 brought our greatest pumpage demands and with it an abnormally dry season for the first seven months. During this year, we installed a Palmer surface-wash system in the old filter plant to increase the quantity of water that we could obtain from this plant. The equipment proved highly satisfactory, and enabled us to obtain a longer filter run.

During 1943, after the new pumps and generators were installed in the two major pumping stations and the elevated tank placed in service, all of the steam machinery in one of the pumping stations was sold.

Following this, we applied to the Federal Works Agency for approval of the construction of a spillway and of raising the dam of one of our impounding reservoirs. After much discussion, FWA refused to approve this project. The city proceeded with the construction out of its own funds, increasing the impounding-reservoir capacity by 150,000,000 gallons.

More Transmission Lines

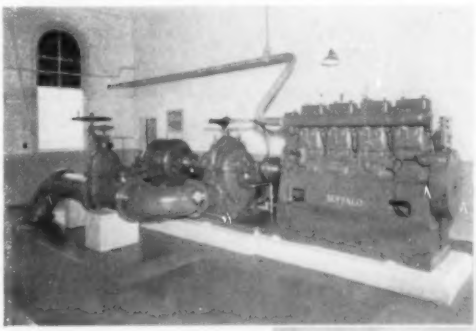
With FWA assistance, we installed 12,000 feet of 24-inch cast iron pipe for a transmission main between Lake Cahoon and the filter plant. Later we erected a new elevated water tank in the Suffolk district, also out of water department funds.

During July of 1944, Lake Kilby reached a new low of 10.3 feet and Lake Cahoon 25.1 feet. This was a serious situation because of the limited capacity of the pipeline between Cahoon and Kilby. We replaced all the pumping station equipment at the Cahoon station with modern pumps, but were unable to exceed 9 mgd, while drawing 13 mgd from Lake Kilby.

During 1945 we installed the three pumping units and a spillway at Lake Kilby. The raw-water flume was constructed in 1946. The first decrease in rate of pumpage occurred in August 1945. The records indicate 1946 pumpage figures approximate those of 1945, which are approximately three times the total for the year 1938. The largest decrease is in the water used by the Navy installations in this area. This group used a peak of 210 mg per month.

As one can see, the Portsmouth Water Department, while she ain't what she used to be, is actually bigger and stronger than she was prior to the war, chiefly because of the husky course of sprouts that our government put it through during those wartime years.

This big 8-mgd pump corrected a deficiency in pumping capacity. It makes a team of three pumps which have a total capacity of 23 mgd.



Wartime demand required this additional 6-mgd filter plant as well as other improvements. These additions brought the Portsmouth water supply system to the greatest strength in its long history.

View of the Federal Aid widening project, showing the construction of the concrete pavement and integral curb, all in one operation. The base is left rough for the sheet asphalt binder and wearing surface, applied later.

Another view of the widening of the 18-foot slab. The old slab was undercut 6 inches to prevent movement between the old pavement and the new base and concrete pavement. Work has been fully completed on one side.

Some Improvements Can't Wait

How Wichita officials solved the municipal engineering problems that have arisen in the growth of a city that certain experts said "could not exist"

By L. K. WHITE
City Engineer
Wichita, Kans.

WICHITA, Kansas, has been called a "modern economic paradox." It received this tag when a number of economists stated solemnly that it could not exist in its present location. Nevertheless, the 1940 official census records some 115,000 people preferring to take their chances with this portion of the Kansas plains. And during the war another 100,000 came who liked it well enough to stay.

Many self-appointed prophets indulged in speculation about the future of the city after the war, and freely predicted a "collapse." After V-J Day, we saw instead both private and public construction activity pushed into acceleration instead of collapse.

Street Improvements Required

Streets in particular demanded attention. Ten years of depression and heavy traffic during the four war years required an immediate program of reconstruction of some of the city's thirty- and forty-year-old pavements. During the summer of 1945, five blocks of the principal street in the retail district underwent a "face-lifting" operation consisting of a new surface and new curb-and-gutter. Petitions for new pavement began coming in, some of the most serious cases of neglected maintenance were ordered rebuilt, and the last half of 1945 was fairly active. The year 1946 accelerated the tempo, and the boiling real estate market demanded paving and sewers in new additions, and "deferred desire" in the older sections brought in petitions for pavement and sewers by the score.

How Street Petitions Originate

A legal petition requires the signatures of a majority of the resident-owned frontage. A "proceeding" may cover a short 300-foot block or may be for a mile of pavement. The type and width must be specified and cannot be changed except for a new petition. The law defines the district as being liable for assessment "halfway to the next street." Valuations for assessment are on the basis of land value only, as determined by three appraisers appointed by the Mayor for each project. After actual cost has been certified to the City Clerk, each owner is notified by post card of his assessment and given 30 days to pay cash or allow the assessment to be collected by taxes over a 10-year period, with interest added at the bid price on the bonds, which in recent years has been as low as 1%, currently about 1¼%. The low interest rate is due to the bonds' becoming an obligation of the city at large in case of default of payment by the owner.

Major thoroughfares which have been so designated by the City Planning Commission and approved by the City Commission can be improved and the total cost paid by the city at large, or in some cases as much as 50% may be charged to the benefit district. An area has been established in the downtown retail district, however, as the usual legal paving district, on the basis that the increased traffic is a direct business asset.

General Pavement Requirements

We use concrete and asphaltic concrete on a concrete base for new construction. We call for asphaltic concrete to resurface old brick pavement and sheet asphalt on binder where considerable leveling is required.

Minimum width for new residential pavement is 30 feet between curbs. We use a concrete pavement 6 inches thick, building one-half the width (15.5 feet) at a time, the curb being constructed integrally with the pavement. We demand machine finishing with attached internal vibrator wherever possible, and a screed with vibrator attached for hand finishing. We require fixed cement content of 1.35 barrels per cubic yard for machine finish and 1.5 barrels for hand finish. For the past two years this cement has been air-entrained. The integral curb, 7 inches high with a 6-inch top, is made of sand concrete with 2 barrels of cement per cubic yard. Expansion joints consist of ¾-inch

creosoted wood blocks. We space them at 30-foot intervals, thus dividing the pavement into panels 30 feet by 15.5 feet. For reinforcing we use a ¾-inch round bar around the edge of each panel and a 6-foot diagonal bar in each corner. For years oil-field sucker rods were used for this, consisting of a 25-foot bar on each side and a U bar at the ends with the 4-foot legs overlapping the side bars. Since these rods are very scarce now, most of the reinforcing is new ¾-inch round deformed bars.

For new asphaltic concrete pavement, we have designed an 8-inch curb. For the asphaltic concrete base, we specify a 5-inch concrete slab reinforced with a ¾-inch bar on each side of the 26-foot slab and a transverse bar at 9-foot intervals. Asphaltic concrete is 2 inches in thickness and laid with a spreader tamper machine. Hand asphalt rakers are a disappearing species of equipment.

No "Low-Cost" Pavement

Wichita does not use a so-called "low-cost," or mat, type of pavement. Curb-and-gutter and excavation followed by sanding is sometimes used as a minimum street improvement, principally to comply with an FHA commitment for a graded yard. Sometimes this does not satisfy until the curb-and-gutter is certified for payment, before a petition for pavement is filed.

The year 1946 was a favorable one for outdoor construction, providing nine months without weather delays. We completed 60 concrete pavement projects, two asphaltic concrete, and two curb-and-gutter projects. These involved 132,400 square yards of concrete pavement and 4,600 square yards of asphaltic concrete for a total length of 8.5 miles. One asphalt paving crew was kept busy throughout the year on reconstruction of old streets.

New Curb Type

The practice in the downtown area is to replace the old curb with a new type of 18-inch curb with an 18-inch top on a slight slope to match the slope of the walk, 16-inch height, a 9-inch base, the back side sloping up to meet the 4-inch walk. Non-extruding expansion joint is used between the curb and the walk. There has been no "tipping" with this type of separate curb in seven years of use. Sidewalk is removed and replaced to at least the first cut and enough more for drainage and general good appearance. Our important Douglas Avenue has been paved to a width of 81 feet. For the eight blocks in the retail district it uses a concrete gutter, 10 feet wide and 8 inches thick, reinforced the same as concrete pavement. This provides a continuous bus-loading zone, if necessary, or a parking strip. The wide concrete gutter provides the answer to shoving caused by buses and grooving caused by cars always parked in the same place because of marking for parking-meter stalls. On the other streets in the parking-meter area, we use a concrete gutter 8 feet wide and 7 inches thick, widened out to 10 feet for 50 feet at both ends of the block for bus-loading zones. The operating practice of a bus company, influenced by the demands of the public, cannot be predicted, and consequently we must provide for all possibilities by constructing the continuous 10-foot gutter on the principal downtown street on which all routes pass and on all four corners of other streets used by busses.

Remove Rotted Ties

We find it necessary to dig out abandoned street car ties left to rot in place when rails were removed some 10 years ago. Most of this construction was on ballast with concrete between the ties only. A power shovel can remove ties and concrete at the same time. We replace the grade with sand for backfill and place a reinforced 7-inch concrete base to grade with the adjacent surface, and the asphalt resurfacing placed over the entire width of the street.

The largest project in 1946 was the widening and resurfacing of 4,500 feet of an 18-foot slab built as a Federal Aid project in 1920-21. The 4,500 feet is the extension of the city limits in that time. The 6-8-6, 18-foot slab was of plain concrete and in good enough condition for resurfacing with binder and sheet asphalt. Two feet of additional concrete "base," built integral with 11 feet of 8-inch concrete pavement, was added on each side of the old slab, making a total width of 44 feet between integral curbs, or four 11-foot traffic lanes, with the center 22 feet asphalt and the two outside lanes concrete. Two inches of binder and one inch of sheet was used for the asphalt surface; a 3-inch shoulder was provided by the concrete pavement 3 inches above the edge of the old slab.

We found it impossible mathematically to parallel the grade of the old slab and maintain an average three inches' difference, and finally used a string and the "practiced" eye. Total cost of this project was $120,000. It is the principal route to the city's largest post-war aircraft factory, which has 4,200 employes.

Sewer Improvements

While all the paving activity was going on, sewer contractors were busy putting 45,500 feet of sanitary sewer in

Top: The completed widening job. Center: This pavement, 7 inches thick, carried industrial traffic. Bottom: Industries have purchased sites on this street because of the convenience of the railroad and the street facilities.

the ground, most of it 8-inch vitrified clay pipe. Twenty-nine projects were about equally divided between old and new territory; the total cost was $129,842.

Total cost of all pavement for the year was $871,049, making the year's total $1,000,891.

In 1947, the city is still growing by filling in vacant areas within and making new additions. Population is estimated to be within 10,000 of what it was during the war-boom years. Building permits for new houses and some commercial work have been issued at the rate of a million dollars per month for two years. All this activity demands rebuilding of old streets and construction of new pavement at the same time. This has stimulated the processing of 229 proceedings for new pavement, 300,000 square yards of concrete, and 100,000 square yards of asphaltic concrete. Forty-one proceedings for sanitary sewers have been processed. Grand total of all work contracted this year is $2,041,026, and the grand total of work authorized but not under contract, $913,000.

Price Rises

Prices are gradually creeping up. Until recently the bid price on 6-inch concrete pavement has been $2.35 per square yard. Most recent bid was $2.45, reflecting an increase in cement price and "protection" against freight-rate increases. This is about a 50% increase over the 1941 price. Other unit prices are: excavation, $1.00 per cubic yard; reinforcing steel, $0.08 a pound; combination curb-and-gutter, $1.40 per linear foot. Asphaltic concrete pavement is now $2.65 per square yard. Average total cost for a 600-foot block for a 30-foot pavement is $7,200, or $300 for a 50-foot building site.

Wichita has now 301 miles of paved streets with a total investment of $17,040,713.34; 362 miles of sanitary sewers—cost, $3,007,515.36; 91 miles of storm water sewers—cost, $1,593,672.42, and 122 miles of sanded and dirt streets.

Several new additions are in the formative stage, and as much as 160 acres may soon be added to the area within the city limits, all requiring new pavements and sewers, both sanitary and storm water. The city does not provide "free" sanitary sewer service outside the city limits. A charge is made for sewage-disposal-plant service, and contracts are made only with organized districts having their own collection system. Areas having septic tanks which have become overloaded are ordered by the state board of health to be included within the sewer service of the district nearest them.

Prior to the war, the economic background of this area was based on farming, livestock, oil, flour-milling and some industry. A recent manufacturers' show in Wichita contained exhibits of many new products made in Kansas, including a new helicopter of radical design and a new type of gas turbine, both developed by local inventors. The big Boeing plant, now empty, which spawned 1,600 B-29's, has left a spawn of the "yeast of industry" which shows excellent promise of providing a base for a larger population. Roger Babson has located his Utopia College 60 miles east of Wichita, in what he claims to be the center of a "magic circle"—a five-state area—destined for a century of industrial expansion. Perhaps we have not seen anything yet!

Knowing Motor Mileage Saves Motor Repairs

By ARTHUR SPENCER
Foreman in Charge of Repairs
Motor Division, Bureau of Sanitation
Newark, N. J.

TO PERFORM special operations, a great many city-owned motor vehicles have auxiliary equipment that is operated either by a power take-off from the truck transmission or by a separate motor. Proper lubrication is a function of engine miles. Where the truck miles and engine miles are the same, as with ordinary haulage trucks, the lubrication problem is merely one of every so many miles on the speedometer. But when, in addition to going places, the vehicle also performs such extra functions as conveying garbage from the back to the front of the truck, sweeping streets, sucking up leaves, or spreading salt, the truck motor miles are not expressed by the speedometer. One of our first burnouts was the motor of one of our refuse collectors. It was an International truck equipped with a Heil conveyor system run by a power take-off from the truck motor. Moving from house to house, the motor was running throughout the 12-hour tour period, during which the truck traveled 35 to 40 miles. Though the motor had been lubricated every 1,500 truck miles, it was found to be filled with sludge.

After overhaul and reinstallation, a tachometer, or motor mileage meter, was installed to find out the motor mileage as differing from the truck mileage. It showed that the motor went three miles to the truck's one mile. These figures are for September and October.

	Truck Miles	*Motor Miles*
September-October	2,717	6,916

We now lubricate every 500 truck miles. This lubrication procedure applies to all trucks on this service.

In the case of an Eductor, there was no way to tell how many motor miles the pump motor had run. The burned-out motor was overhauled and reinstalled. Tachometer readings were:

	Truck Miles	*Motor Miles*
September-October	726	2,583

The solution has been to lubricate by motor miles instead of by road miles.

Besides the Eductor we use truck-mounted Hayward buckets for cleaning catch basins. We took similar readings on the motor of an International truck equipped with a Healy hoist, which operates the Hayward orange peel bucket from power take-off on transmission. The tachometer showed the following:

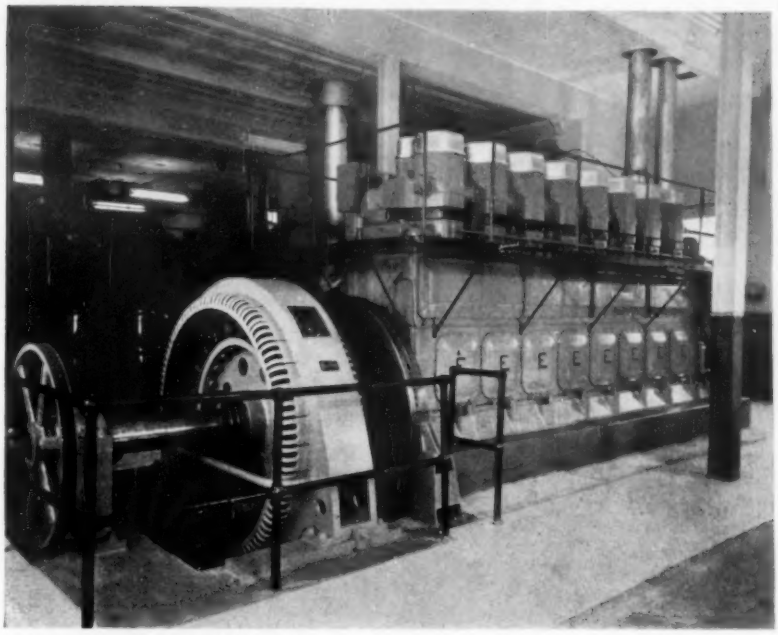
	Truck Miles	*Motor Miles*
July-August	591	2,660

Now we lubricate the motor more often.

Tachometers can be used both to prevent motor burnouts and to determine the extent to which a piece of automotive equipment is employed at its special function. For instance, a man or a crew can go out with a street sweeper and return with many more miles on the speedometer; but how much sweeping was done? In our Elgin street sweepers there is a dual speedometer drive. Therefore, in addition to the speedometer, we were able to mount a tachometer which cuts in when the broom is let down and goes to work and cuts out when the broom is lifted. This registers the sweeping miles and shows what our men are doing. The tachometers used for this work were purchased from the Stewart-Warner Corp., Chicago, Ill.

Our experience has convinced us of the need for widespread use of motor-mileage meters in municipal operations. They should be used in connection with all equipment having auxiliary motors. The different types of equipment include air compressors, cranes, gasoline-motor operated pumps, loaders, spreaders, catch-basin cleaners, all radio-equipped vehicles, and tractors with their many attachments. The cost is absorbed in repair savings and we now have a true record of every machine's operation.

Diesel Engine Developments



This Enterprise DSQ-8 diesel engine was installed recently at Elk Point, S. D. The unit, 1,063 hp at 327 rpm with a kw rating of 750, doubles the horsepower of Elk Point's present installations and was necessitated by the addition of 150 miles of new lines to the distribution system in the Elk Point area.

DIESEL engine manufacturing has in the past few years witnessed three major trends, according to Saul Belilove, Engine Division, Enterprise Engine and Foundry Co., San Francisco, Calif. The trends are:

¶ A tendency toward higher speeds.

¶ A great increase in production with the accompanying decrease in the first cost.

¶ Design developments that have increased the loading of the engines appreciably.

The four-cycle engine, says Mr. Belilove, appears to have advantages over the two-cycle, particularly in view of its use with the exhaust gas turbocharger. However, a controversy still exists regarding the merits of the two systems.

In-line Engine Design

In-line cylinder arrangements still are the most popular; nevertheless the customer can today draw from designs utilizing the V-type, the opposed-piston type, and, in certain fields, the double-acting type.

Increased loading capacity probably is the most important improvement. Recent developments have allowed designers to increase the average effective brake pressure from 80 psi to 120 psi in four-cycle supercharged engines. Evidence exists that the designers may obtain possibly another 20 to 25% in the future.

Supercharging

Supercharging has been an important step in engine efficiency. Originally the engines used a mechanically driven supercharger that absorbed an appreciable portion of the engine power. Some 10 years ago a Swiss development was introduced in this country, the Buchi system, which utilizes the heat and velocity of the exhaust gases for driving the supercharger of four-cycle engines.

One factor in identifying engine-loading limit is smoke from the exhaust. Smoke indicates that the engine is not getting enough air to burn the fuel thoroughly, although supercharging tends to eliminate smoke as a guide. Another method of indicating engine-loading limits is by measuring the carbon dioxide in the exhaust. This tells how much fuel is being used in comparison with the air being used. One expert suggests that 7½% carbon dioxide be used as the limit, but this holds only for the four-stroke, unsupercharged engines.

Heat in the pistons and cylinder heads is an important factor. One major development has been in the field of heavy-duty lubricating oils which keep carbon contaminants dispersed in the lubricating oil. A second development has been the use of oil-cooled pistons which help to dissipate the heat which is radiated and conducted from the combustion gases into the pistons. Still further developments cover the chrome-plated piston rings, cylinder linings and improved exhaust valves.

Generally, most operators recognize the advantage gained by using high-grade diesel fuels. However, diesels *can* burn lower-grade oils at a considerable saving. In view of the present fuel situation, one probably will expect greater concentration on this point in the future.

Dual Fuel

A significant development has been the gas-oil engine. With this engine, one can burn natural gas on the diesel cycle while using only a small amount of oil (10% or less) for pilot ignition. Where natural gas is cheap, or where gas from other sources, such as sewage-treatment plants, is available, this type of engine is particularly useful.

Peru Establishes A National Housing Corporation

By DAVID VEGA-CHRISTIE*
In collaboration with Jacob Crane, Office of the Administrator, Housing and Home Finance Agency, Washington, D. C.

Public and private enterprise to cooperate in slum clearance and neighborhood unit development

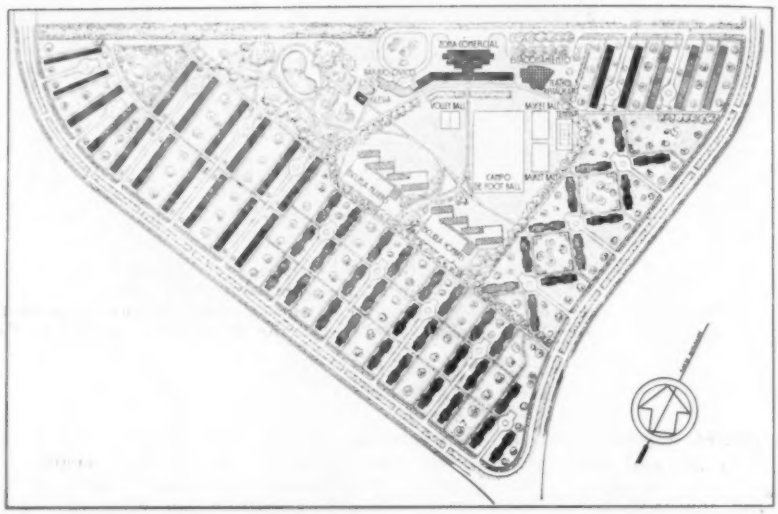
PERU, like most of the world today, faces a housing shortage. Overcrowding, insanitary living conditions, slums, and blighted areas are major problems. The most pressing need is for construction of modern, sanitary, low-cost housing—a field in which private capital, for lack of financial incentive, has not been very active.

Since 1936, various Peruvian governments have tried to cope with the situation by building low-rent housing and "workers' quarters" in Lima and other cities. Having no planned program, they met with only limited success. Through the Ministry of Public Works, twelve projects were completed, providing about 2,500 dwelling units. In addition, some housing was undertaken by the municipalities.

The present government is beginning to solve the problem by initiating a nation-wide planned housing program for low-income groups. It aims to unify effort by giving direction in planning, financing, building, and management, and to stimulate private enterprise by offering financial inducements as attractive as in other fields. The government will undertake some projects directly and will collaborate in others.

Decentralization and Slum Clearance

The first objective is decentralization to relieve urban congestion, to be followed by slum clearance and the remodeling of blighted areas. The program will extend into villages as well as cities. Construction has already begun on "Neighborhood No. 3," a model workers' housing project built by the government on a site of about 77 acres in an industrial section between Lima and its port city of Callao.



Plan for a large-scale neighborhood unit to accommodate about 5,000 persons: multi-family dwellings; cul-de-sac interior streets; low density; ample garden space; schools, large playground, swimming pool, civic center, church, etc.

To carry out the program, the government has set up a National Housing Corporation (Corporacion Nacional de la Vivienda) as an independent body, in accordance with a law enacted by Congress in November 1946. The general purpose of the newly formed Corporation is the betterment of housing conditions throughout the country from the social, hygienic, technical, and economic aspects.

In establishing the Corporation, the government has drawn on the experience of various other countries. Its organization is based on rules governing the principal official and semi-official financial institutions in Peru, on modern systems in the banking and stock corporation field, and especially on the laws of Switzerland. Functions are based on the experience of Argentina, Colombia, France, and Spain, on reports of the International Labor Office, and on existing laws regarding housing in Peru.

These functions are as follows: (a) to make plans for urban and rural low-rent housing on a regional or local level throughout the country; (b) to build, to aid in the construction of, or to make sanitary, housing for low-income people; (c) to clear slums; (d) to undertake land subdivisions and provision of utilities; (e) to found subsidiary industries for building construction; (f) to administer community housing programs and manage projects.

All these functions may be carried out by the Corporation directly or through some other agency, public or private.

The Financial Set-up

Financial functions include the issuance of bonds, transfer of securities, and the purchase or leasing of property. The

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A neighborhood unit under construction near Lima. The greatest urban concentration in Peru is that of Lima and its port city, Callao. Several new neighborhood units are in process of development in this urban region. Neighborhood Unit No. 3, shown above, is situated between Lima and Callao. Lima is one of the oldest cities in the Americas.

Corporation may make loans for housing construction or borrow money to accomplish its goals. In the case of slum clearance it has the right of appropriation to aid in carrying out the law.

The authorized capital of the Corporation is 100,000,000 soles,† which can be increased. The Corporation will issue bonds, secured by the government and not to be in excess of ten times the Corporation's assets. Shares are registered and are of two kinds: Class A, given to the government in exchange for its grants and contributions, not paying dividends; and Class B, issued to private investors, which yield dividends not less than 5% and not more than 6%. Bonds and shares are exempt from taxation both as to principal and interest.

The Corporation is administered by a board of eleven directors, with a manager at the head of the staff. Central offices are in Lima; branch offices may be established wherever necessary at home or abroad. Three directors are appointed by the President of Peru: one is an expert in the problems of white-collar workers, another in labor problems, and the third not specified. Seven members are elected by various private organizations, such as the Medical Association, the Institute of Architects, the Society of Engineers, the Institute of Urbanism, and others, and one by the owners of Class B shares in excess of 5,000.

The Corporation may plan and build directly through its own personnel or through contractors. In order to avoid speculation, it can prohibit the resale of a house for 20 years after the last payment is made. Dwellings which it has sold under purchase contract may not be used at the same time as security by the owners for other loans. Payments may be made by lump sum or installment. Except for municipalities, financial organizations, or industries and individuals seeking housing for their workers, not more than one house can be sold to each person. In the case of multiple sales, the purchaser must accept the Corporation's rent control.

Certain eligibility standards are set for Corporation housing applicants. To encourage home ownership, the Corporation may lend the balance not provided by the mortgage bank, up to 6,000 soles. A worker may pledge as security not more than 30% of his monthly salary or pension. Special consideration will be given in case of economic mishap beyond the control of the buyer or tenant.

Perpetual Leaseholds

The Corporation, in order to carry out its functions of slum clearance, remodeling of blighted areas, and land assembly, may obtain perpetual lease holds from landowners at moderate rent, thus avoiding any great outlays of cash for purchase. The Corporation will have the right to build, sell, or mortgage the real estate. At any time the leasehold can be converted into ownership. The lessor (owner of the land) will have preference for development or for purchasing the building or buildings only when his equity is higher than the Corporation equity.

In order to stimulate and aid private enterprise, the Corporation will offer services, such as planning and designing, for moderate fees. It may grant to workers' housing projects undertaken by other public, semi-public, or private agencies some of its own privileges, provided these agencies adhere to the Corporation's regulations on sales, rents, etc.

Next April the Corporation will finish construction of its first major project—"Neighborhood No. 3." The estimated total cost of this 77-acre development is 22,000,000 soles. It will provide housing for about 5,500 individuals, or close to 1,100 families. It is the first of seven such projects to be built in the vicinity of Lima alone. The plan is for a modern, self-contained community with churches, civic centers, schools, a library, market and shopping centers, playgrounds, and parks, to achieve an attractive, healthy, well-balanced environment.

The buildings of the project are being constructed of brick and reinforced concrete. Use will be made of native Peruvian materials insofar as possible. Dwellings will be multiple-family units of two and four stories, with about 14 units per gross acre. Land coverage by buildings will be 12 percent.

It is recognized that the government alone cannot satisfy Peruvian housing needs. The National Housing Corporation will continue its low-rent housing construction as far as funds will permit. It will also make every effort to encourage private enterprise to undertake similar projects in accordance with its planned program for housing improvement throughout the country.

† 1 Sol = $0.1538.

Mosquito-control along the swampy Lake Jem. Note the coverage being obtained by the "fog."

E. H. Johnson, Sanitary Officer, watches DDT fog envelop tenant houses in Sanford, Fla.

Sanford, Fla.

Fogs the Flies

Success of last year's program has prompted officials to adopt fogging as an annual operation

SANFORD, Fla., was in something of a fog last summer. But this particular fog was not associated with any confusion. It was specially directed, prepared from a 10% DDT-in-oil solution, and was directed toward getting rid of the insect pests that trouble most southern cities. The trial last year was successful enough to prompt the use of the equipment on an annual basis.

Southern Chemicals Company, a Sanford pest-control company, and Fog, Inc., Tallahassee, southern dealer for TIFA, were given the contract jointly to cover the town. The city supplied them with sufficient quantities of 10%-DDT-in-oil solution for the work. They performed the work with a two-man team that covered the town in a bright red jeep with the crimson TIFA unit set in back. They made a round trip through every street and alley, directing the fog first on one side and then on the other.

Community Reaction

As the unit made its rounds many residents, who had been told about what was going on, opened their windows wide to allow the vapor to enter. Others moved trash cans out to the alley. The only complaints were from housewives who said that the fog generators missed their alleys.

The trailer park, the school grounds, swampy areas, the municipal zoo, the jail, the tourist center, and other public buildings all got thorough DDT treatment. At first some of the animals at the zoo were bewildered by the strange white clouds. Monkeys hid their faces; cats crouched low in fright, and parrots jabbered. On the second trip they took the proceedings more coolly.

But the animals in the zoo were not the only ones which took an interest in the work. Merchants in town also asked for the service. Several restaurants applied for the fogging to rid themselves of roaches and flies. The local ball park placed an order to treat the stands, dugouts, and clubhouses. George Touhy, its business manager, later maintained that there was total freedom from mosquitoes and other bothersome pests as a result. Many individual houseowners asked for added fogging service.

One interesting project covered the fogging of a swampy area of a neighboring town where a countrywide barbecue was to be held the following evening. Meat was barbecued all night and thousands of people were served without the nuisance of flies and mosquitoes.

The work in Sanford was directed by E. H. Johnson, sanitary officer, and G. L. Duncan, city building inspector. It was begun under the official action of H. James Gut, Mayor of Sanford. It parallels work in fly and mosquito control that has been conducted in San Antonio, Texas; Amityville, L. I.; Chatham, Lincoln Park, and Essex County, N. J., and Wilmington, Delaware.

How Much Backwashing For Filter Beds?

DON'T overdo that filter backwashing, says R. W. Haywood, engineer of the American Viscose Corp., Philadelphia, Pa. It is a fallacy that one must see the filter bed before the backwashing is complete. The filters are clean enough when you are able to see one foot below the water surface.

Mr. Haywood made this point as part of a talk on plant maintenance delivered before the Virginia section of the American Water Works Association which held its meeting recently in Roanoke, Va.

War Memorials—

Planned or Completed

THROUGH the courtesy of the Commercial Organization Department of the Chamber of Commerce of the United States, THE AMERICAN CITY is able to publish this tabulation of replies received from local chambers of commerce on the subject of war memorials in the 1947 survey of the National Chamber.

Of 740 chambers from every state and Hawaii and Alaska that responded to the questionnaire, 265 gave information as to local memorials of World War II. Of these 43 are completed and 222 planned.

A wide range of types of memorials was reported:

Type of Memorial	*No. of Cities*
Airport Administrative Building	1
Air Park	4
American Legion Building	12
Armory	2
Art Center	1
Athletic Field	6
Athletic Stadium	20
Auditorium	42
Band Shell	1
Bridge	2
Chimes	1
Civic Center	19
College Administrative Building	3
Coliseum	2
Community Building	17
Community Club	5
Community Hall	5
Farm Exposition Building	1
Football Stadium	3
Fountain	1
Hospital	19
Library	4
Monument	19
Museum	1
Parkways	5
Rebuilding of Fort Ligonier	1
Recreation Center	9
Recreation Park	29
School Archway	1
Scholarship	1
Swimming Pool	9
Teen-Age Canteen	1
Tree and Plaque	6
University Memorial Union	1
Veterans' Homes	6
YMCA Building	5
Youth Center	2

The following is a list of the cities whose Chambers of Commerce furnished information as to the type of memorial planned or built in their respective communities. An asterisk (*) indicates a completed memorial.

GROUP A—UNDER 5,000 POPULATION

City and State	*Type of Memorial*
Apalachicola, Fla.	Athletic Stadium
Broken Bow, Nebr.	Community Hall
Camden, Maine	*School Auditorium and Gym
Cando, N. D.	Hospital
Clarion, Pa.	*Recreation Park
Essex, Md.	Monument
Foley, Ala.	*Monument
Fremont, Mich.	Monument
Gallatin, Mo.	Veterans' Home
Gilmer, Texas	Recreation Center
Glendive, Mont.	Community Building
Harlan, Iowa	Community Building
Hayward, Wis.	Hospital
Jackson, Minn.	Community Club
Jefferson, Iowa	*Armory
Kimberly, Wis.	Athletic Field
Kingstree, S. C.	Monument
Lee's Summit, Mo.	*Tree and Plaque
Lisbon, N. D.	Hospital
Los Gatos, Calif.	American Legion Home
Mason, Mich.	*Monument
Mendota, Ill.	Community Building
Mount Dora, Fla.	Community Hall
New Port Richey, Fla.	Monument
Nocona, Texas	Civic Center
Oxford, N. C.	Library
Perryton, Texas	American Legion Building
Port Orchard, Wash.	Athletic Field
Portsmouth, R. I.	Scholarship
Prentiss, Miss.	Football Stadium
Rogers City, Mich.	Monument
Sauk Center, Minn.	Park
Savannah Beach, Ga.	*Hospital
Sidney, Mont.	Hospital and Civic Center
Sidney, Nebr.	Hospital
Tilton, N. H.	Community Hall
Vermillion, S. D.	Monument
Vero Beach, Fla.	Hospital
Wadesboro, N. C.	Auditorium
Wahoo, Nebr.	Auditorium
Weiser, Idaho	Recreation Park
Whiteville, N. C.	Stadium and Athletic Field
Woodsville, N. H.	Monument

GROUP B—5,000-10,000 POPULATION

City and State	*Type of Memorial*
Aberdeen, Miss.	Football Stadium
Abilene, Kans.	Museum
Alexander City, Ala.	Legion Hall
Alva, Okla.	Community Building
Belfast, Me.	Athletic Field
Blackwell, Okla.	*Swimming Pool
Bozeman, Mont.	Airport Administrative Building
Columbus, Nebr.	Stadium
Delano, Calif.	Park
De Ridder, La.	Civic Center
El Campo, Texas	Legion Building
Falls City, Nebr.	Farm Exposition Building
Franklin, Pa.	Athletic and Recreation Field
Garden City, Kans.	Auditorium
Grants Pass, Ore.	Auditorium
Grass Valley, Calif.	*Hospital Wing
Hamburg, N. Y.	Recreation Center
Hayward, Calif.	*Recreation Park
Juneau, Alaska	*Library
Ligonier, Pa.	Rebuilding of Fort Ligonier
Livingston, Mont.	Hospital
Livingston, N. J.	*Recreation Center and Park
Marion, Va.	Sports Stadium
Marysville, Calif.	County Recreation Facilities
Memphis, Texas	Community Building
Mineola, Texas	Civic Auditorium
Mission, Texas	Community Building—Gym and Auditorium
Montevideo, Minn.	Monument
Mt. Carmel, Ill.	Veterans' Center
Nacogdoches, Texas	*Recreation Park
Natchitoches, La.	*Boulevard
Newberry, S. C.	Hospital
North Wilkesboro, N. C.	YMCA Bldg. and Golf Course
Olney, Ill.	Community Building
Pharr, Texas	Recreation Park
Quincy, Fla.	Hospital
Red Oak, Iowa	Hall
Rocky Ford, Colo.	Community Center
Russell, Kans.	Recreation Park
Sanford, N. C.	*Auditorium
Sparta, Wis.	Park
Springfield, Ore.	Community Building
Springville, Utah	Monument
Sunnyside, Wash.	Swimming Pool
Susanville, Calif.	Recreation Park
Thibodaux, La.	City Park
Wayne, Mich.	Legion Hall; Swimming Pool
Wharton, Texas	College Administration Building
Wythesville, Va.	*Legion Building
Yankton, S. D.	Swimming Pool and Park

GROUP C—10,000-25,000 POPULATION

City and State	*Type of Memorial*
Albemarle, N. C.	Community Building and Veterans' Auditorium
Ames, Iowa	Community Building
Anaheim, Calif.	Civic Center
Annapolis, Md.	Public Park
Asbury Park, N. J.	*Plaque
Asheboro, N. C.	Recreation Park
Baker, Ore.	Swimming Pool

City and State	*Type of Memorial*
Burlington, N. C.	Community Building
Cadillac, Mich.	Stadium
Caldwell, Idaho	Hospital
Carbondale, Ill.	*American Legion Home
Carlsbad, N. Mex.	*Bridge
Cedar Falls, Iowa	Hospital Wing
Chambersburg, Pa.	Community Center
Coral Gables, Fla.	*Youth Center
Dover, Ohio	*Public Auditorium
Dunkirk, N. Y.	Youth Center
El Centro, Calif.	*Plaque
Endicott, N. Y.	Community Center
Fayetteville, N. C.	Recreation Center
Fremont, Nebr.	*Athletic Park
Gardena, Calif.	*Community Center
Gastonia, N. C.	*Veterans' Hospital
Glen Cove, N. Y.	Stadium
Goose Creek, Texas	Stadium
Grand Haven, Mich.	Air Park
Grand Island, Nebr.	Memorial Stadium
Grand Prairie, Texas	Veterans' Municipal Building
Hanover, Pa.	Plaque
Idaho Falls, Idaho	*Parkway
Independence, Mo.	Community Center
Iowa City, Iowa	Stone Monument
Jennings, La.	Swimming Pool
Jonesboro, Ark.	Public Library
Kewanee, Ill.	Plaque
Laramie, Wyo.	Civic Center
Las Vegas, N. Mex.	School and Veterans' Club
Latrobe, Pa.	Recreation Park
Lewiston, Idaho	Bridge
Manhattan, Kans.	Municipal Auditorium
Martinsburg, W. Va.	*Park
McAllen, Texas	Park, Auditorium and Library
Middletown, N. Y.	Swimming Pool
Moravia, N. Y.	Gym
Mt. Clemens, Mich.	Park
Mt. Pleasant, Mich.	Plaque
Muscatine, Iowa	YMCA
New Castle, Ind.	Parkway
Niles, Ohio	Hospital
Norfolk, Nebr.	Stadium
North Platte, Nebr.	Swimming Pool
North Tonawanda, N. Y.	*Swimming Pool
Northampton, Pa.	Community Center
Oneonta, N. Y.	Chimes
Paris, Ill.	*Tablet
Paris, Texas	Municipal Auditorium
Pittsburg, Calif.	Civic Auditorium and Pool
Pocatello, Idaho	Recreation Center
Ponca City, Idaho	School Archway
Pottstown, Pa.	*Recreation Park
Presque Isle, Maine	Recreation Building
Pulaski, Va.	YMCA
Rock Hill, S. C.	YMCA
Ruston, La.	Community Center
St. Augustine, Fla.	Monument
St. Charles, Mo.	Auditorium
St. Cloud, Minn.	*Country Club
St. Joseph, Mich.	Hospital
St. Paul, Minn.	Memorial Highway
San Luis Obispo, Calif.	Pool
Shelby, N. C.	Community Center
Southridge, Mass.	Athletic Field
Stillwater, Okla.	*Park and Golf Course
Streator, Ill.	*Monument
Taft, Calif.	Community Building
Tucumcari, N. Mex.	*Veterans' Club
Visalia, Calif.	Civic Center
Ypsilanti, Mich.	Park

GROUP D—25,000-50,000 POPULATION

City and State	*Type of Memorial*
Ashland, Ky.	Legion Home
Bethesda, Md.	Library
Beverly, Mass.	Auditorium
Bremerton, Wash.	Stadium and Swimming Pool
Brownwood, Texas	*State Park
Compton, Calif.	VFW Building
Dayton Beach, Fla.	Auditorium
East Liverpool, Ohio	Auditorium
Easton, Pa.	Community Center
El Dorado, Ark.	*Football Stadium
Ft. Lauderdale, Fla.	Auditorium
Greenville, S. C.	Auditorium
Greenwich, Conn.	Civic Center
High Point, N. C.	Airport
Hot Springs, Ark.	Stadium and Airport
Huntington Park, Calif.	Civic Center
Inglewood, Calif.	Monument
Johnson City, Tenn.	Hospital
Joplin, Mo.	Airport
Kankakee, Ill.	*Community Building
Kingston, N. Y.	Park
Lafayette, La.	Civic Auditorium
Marion, Ohio	Veterans' Home
Mason City, Iowa	Armory
Massillon, Ohio	Public Auditorium
Miami Beach, Fla.	Auditorium
Missoula, Mont.	Community Building
Mansfield, Ohio	Memorial Forest
Newport News, Va.	*Museum
Paducah, Ky.	College Administration Building
Phoenix City, Ala.	Tower and Hospital
Poughkeepsie, N. Y.	Auditorium
Rochester, Minn.	Legion Recreation Building
Royal Oak, Mich.	*Monument
Santa Barbara, Calif.	Civic Center
Spartansburg, S. C.	Auditorium
Washington, Pa.	*Monument
Watertown, N. Y.	Stadium
Wausau, Wis.	Community Auditorium

GROUP E—50,000-100,000 POPULATION

City and State	*Type of Memorial*
Alameda, Calif.	Park, Yacht Harbor, Stadium
Asheville, N. C.	Hospital
Battle Creek, Mich.	Stadium
Binghamton, N. Y.	Auditorium
Columbia, S. C.	Teen-age Canteen
Evansville, Ind.	Extension to College
Green Bay, Wis.	Community Building
Greensboro, N. C.	Coliseum
Jackson, Mich.	Auditorium
Jackson, Miss.	Stadium
Lafayette, Ind.	Band Shell
Lansing, Mich.	Auditorium
Lawrence, Mass.	Auditorium
Lexington, Ky.	Auditorium
Macon, Ga.	Park and Monument
Pittsfield, Mass.	Auditorium
Quincy, Mass.	YMCA
St. Joseph, Mo.	Auditorium
San Pedro, Calif.	Recreation Building
Schenectady, N. Y.	Auditorium
Topeka, Kans.	University Memorial Union
Van Nuys, Calif.	Park
Winston Salem, N. C.	Auditorium
Woonsocket, R. I.	Recreation Building

GROUP F—100,000-200,000 POPULATION

City and State	*Type of Memorial*
Arlington, Va.	Civic Center
Canton, Ohio	Civic Auditorium
Chattanooga, Tenn.	Park
Des Moines, Iowa	Auditorium
Duluth, Minn.	Auditorium
Flint, Mich.	Auditorium
Fort Wayne, Ind.	Coliseum
Gary, Ind.	Stadium
Lynn, Mass.	Civic Auditorium
Mobile, Ala.	Stadium
Phoenix, Ariz.	Art Center
Reading, Pa.	Stadium
Spokane, Wash.	Civic Auditorium
Springfield, Mass.	Stadium
Wilmington, Del.	Civic Auditorium

GROUP G—200,000-5,000,000 POPULATION

City and State	*Type of Memorial*
Atlanta, Ga.	Stadium
Birmingham, Ala.	Club Room
Cincinnati, Ohoo	Stadium
Columbus, Ohio	*Community Building
Denver, Colo.	American Legion Recreation
Fort Worth, Texas	Municipal Hall
Jacksonville, Fla.	Highway and Parkway
Long Beach, Calif.	Veterans' Building
Omaha, Nebr.	*Park
Portland, Ore.	Auditorium
St. Paul, Minn.	Veterans' Building
Staten Island, N. Y.	Stadium

GROUP H—OVER 5,000,000 POPULATION

City and State	*Type of Memorial*
Cleveland, Ohio	Fountain
Milwaukee, Wis.	Civic Building
St. Louis, Mo.	*Monument
Washington, D. C.	Civic Auditorium

Rocky Mount Builds Soil-Cement Streets

...and finds they can be financed by bonds covering "solid-base" pavement under State law

Cement being applied to the base by a belt spreader after the soil had been pulverized thoroughly.

Compaction follows the mixing operation. Note that the tractor pushes rather than pulls the sheepsfoot roller.

A Seaman Pulvimixer blends the soil and the cement. This shot shows a "dry" run.

To compact the top inch not brought to density by the sheepsfoot rollers, rubber-tired rollers were put to work.

This view shows the street whereby the stabilized base course has been completed.

IN THE eyes of the engineer, soil-cement pavement generally is classed as a surfacing designed to carry lighter traffic loads and is comparable to a carefully designed soil-cement stabilized base or an asphalt-cement base. But according to the North Carolina state law, a soil-cement can be classed as a "solid base" and consequently comes under a more favorable system of financing.

Design Requirements

City Engineer Frank H. Cothran, Rocky Mount, N. C., and City Manager Roy L. Williamson took advantage of this fact during the past season and built 86,000 square yards of soil-cement streets for this city, covering a total of 5.8 miles. The "solid base" classification allowed them to sell bonds that run for 20 years instead of 10 and cut the annual debt service by one-half.

The design selected by City Engineer Cothran required the use of a 1½-inch sand-asphalt-type wearing surface. In most cases, it also incorporated curb-and-gutter to reinforce the base at the edge where it is recognized to be the weakest. On those streets without curb-and-gutter, the base was built 21 feet wide and was topped with a 20-foot width of surface course.

The first step in the base construction called for scarifying the existing subgrade to a depth of 6 inches. When it had been pulverized to a smooth, even consistency, the contractor added cement with a belt-type spreader to produce a mixture containing 10% cement. the specifications required that soil pulverizing should continue until 80% of the soil passed a #4 sieve, based on dry weights and excluding gravel or stone. It also required that the cement not be applied if the moisture content of the soil exceeds 2% of the optimum required for maximum compaction by the Proctor test.

This meant the addition of 42 pounds per square yard. Seaman Pulvimixers blended the cement with the soil and were able to produce a smooth, homogenous mix quickly and efficiently. The mixers carried a spray bar in front of the mixing unit, and received water from tank trucks that followed behind.

This arrangement greatly speeded the work at this stage and insured greater control. When manipulation was complete, the moisture content of the mix was within 2% of the optimum figure determined by the Proctor test.

Following this step, the contractors compaced the base first with sheepsfoot rollers and then with graders and rubber-tired rollers. The work was so conducted that the base reached its specified density in three hours. When the base had acquired sufficient compaction, it was allowed to cure for three days and was kept moist during this period. Immediately thereafter, it was covered with a prime coat of cut-back asphalt applied at a rate of 0.2 gallons per square yard.

Wearing Surface

Throughout the job the base attained an average density of 113 pounds per cubic foot at an average moisture content of 11.6%. Test specimens of the soil-cement base averaged 692 psi after 30 days, increasing to 1,040 psi in 80 days, and 1,411 psi in 130 days.

The soil-cement type of paving is well suited to this area and the soil types ideal, Engineer Cothran reports. Very little soil had to be removed or brought in. Although present work is confined chiefly to residential areas, he feels that it could be used also on other streets and meets requirements safely.

To provide the wearing surface, the city specified a 1½-inch wearing surface of sand and asphalt. This was laid with a Barber-Greene asphalt paver. The as-

phalt mix used for the wearing surface conformed to these specifications:

Passing No.	*Retained No.*	*Percent by Weight*
4	...	100
4	10	0-10
10	40	5-55
40	80	25-70
80	200	5-50
200	...	2-10

The bitumen in a mix ranged between 7% and 10%, but was not allowed to vary by more than 0.5% once the mix was selected. The bituminous material was a medium grade with 85-100 penetration conforming to a grade recognized in the State of North Carolina as AP-3. The mix produced an average stability of 2,000 pounds when tested by the Hubbard-Field method.

The work was designed by Froehling and Robertson of Richmond, Va., consulting engineers. R. C. Koppers was the soils engineer assigned for this job. The work was contracted by the Exum-Cline Company of Rocky Mount. D. W. Winkelman subcontracted the soil-cement portion. It was reported the total cost of the paving in place was $1.40 per square yard.

One Machine-Made Bill For Electric, Water, Sewer

By WILLIAM S. HART, *Auditor*
City Light & Water Works
Goshen, Ind.

TIME-SAVING and accuracy are outstanding advantages of machine billing and posting of electric, water, and sewer charges by the city of Goshen (population 11,375). This may be seen by following one account through our system.

The first step is to read the customer's meters and to enter the readings in the meter books, which are returned to the office, where the charges are figured by the rate clerk. Another clerk verifies the computation. For billing purposes, all the consumption and charges for each utility are run off on a tape by a Sundstrand adding machine. This tape and the meter book are given to the machine-billing clerk, who machine-prints the bill and the customer's ledger card simultaneously. This information is recorded on a proof sheet. Proof of accuracy is given by comparing the totals on the proof sheet with the data on the predetermined tape. Our old hand-system provided no proof of figuring charges or of billing.

Checking Stubs

The customer receives his bill by mail and returns it with payment. The cashier machine receipts both parts of the bill. The long part is returned to the customer, and the cashier's stub is filed in numerical order as to books and accounts. At the close of the day, the totals on the receipting machine are taken off, and the tape is removed. Cash must balance with tape and stubs. After checking the stubs against the delinquent accounts and any payments recorded, the stubs are given to the cash clerk for posting.

The payment represented by each stub is posted to the correct ledger card, with duplicate posting on proof sheet. When the day's cash is posted, the totals applying to each utility are printed by the billing machine on the proof sheet. Stubs and proof sheet are returned to the cashier, who checks these totals with the totals from the receipting machine. This provides positive proof that cash, stubs, ledger cards, and proof sheets are in balance. The cashier then files the stubs by day in a permanent file and returns the proof sheets to the cash clerk for filing. The money is turned over to the Clerk-Treasurer for banking, closing the life span of the utility bill.

A third machine has just been added to the two Underwood Sundstrand Model Municipal Accounting Machines which speed this work and make possible the careful checking we do. The old system required much more time, with no positive proof of complete balance. The new system is a great time-saver and assures all-important accuracy with ease.

Goshen's new system of machine billing is accurate and time-saving.

Factors Involved in Water Supply by River Infiltration

THESE pertinent points were raised and answered by R. G. Kazmann, Ranney Method Water Supplies, Columbus, Ohio, in a paper given before the Ohio Section of the American Water Works Association held recently in Columbus.

What does "river infiltration" mean?

Basically, it means that water from a river or creek percolated through the river bed into the surrounding sands and gravels. This, of course, can happen only when the water table in the area is below the water level in the river. Seepage landward under levees and flood walls is a typical example as well as a recognized engineering problem.

Is this the only way that infiltration can be induced?

It also can be encouraged by lowering the ground water table by means of a well, a sub-drain, or a horizontal collector so that the water can percolate through the river bed to the collecting device.

What is the character of this infiltration water?

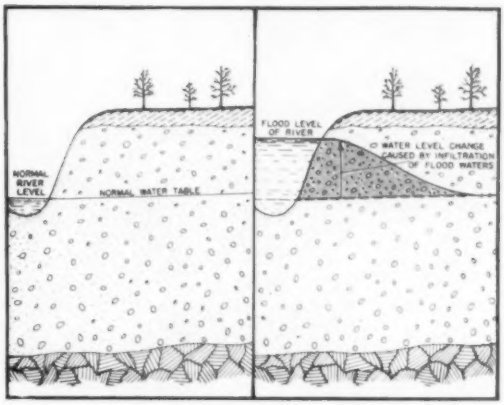
Since it has been filtered through hundreds of feet of densely packed sand and gravel, it is of course bacteriologically safe and somewhat better in quality than "normal" ground water. It is usually softer and contains fewer dissolved minerals. It is also completely free from organic tastes and odors. It is colder than river water in the summer, and somewhat warmer in the winter because of the heat storage and transfer in the ground.

Can the volume of ground water from any aquifer be accurately forecast?

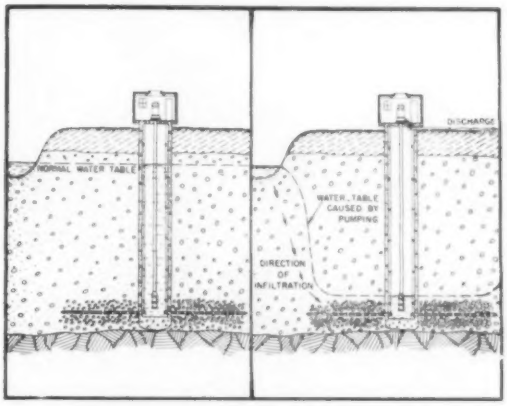
Normally, rain-water percolates into an aquifer composed of sand and gravel at an annual rate varying between 300,000 to 1,000,000 gallons per day per square mile. Thus with a five-square-mile area exposed to rainfall, the water developed would range between 1.5 and 5 mgd. However, several years of study and observation are needed to establish the recharge rate of a specific aquifer.

Is it equally difficult to forecast the supply based on river infiltration?

Generally speaking, it is not. As a rule, one knows the maximum amount of water that the stream carries. By making a short exploratory study, one can determine the perennial yield. The survey must disclose these factors:



Two examples of infiltration from a surface supply. The example at left is well known to those living near leveed portions of any river.



The example at right shows the same effect produced by water pumping near a surface supply.

1. Whether infiltration will occur if you remove water from the aquifer. Silted river bottoms occasionally slow or stop this flow.
2. The quantity of underground storage available.
3. The permeability of the materials comprising the aquifer, thus fixing the number and type of ground water units required.
4. The probable chemical characteristics of the infiltrated water.

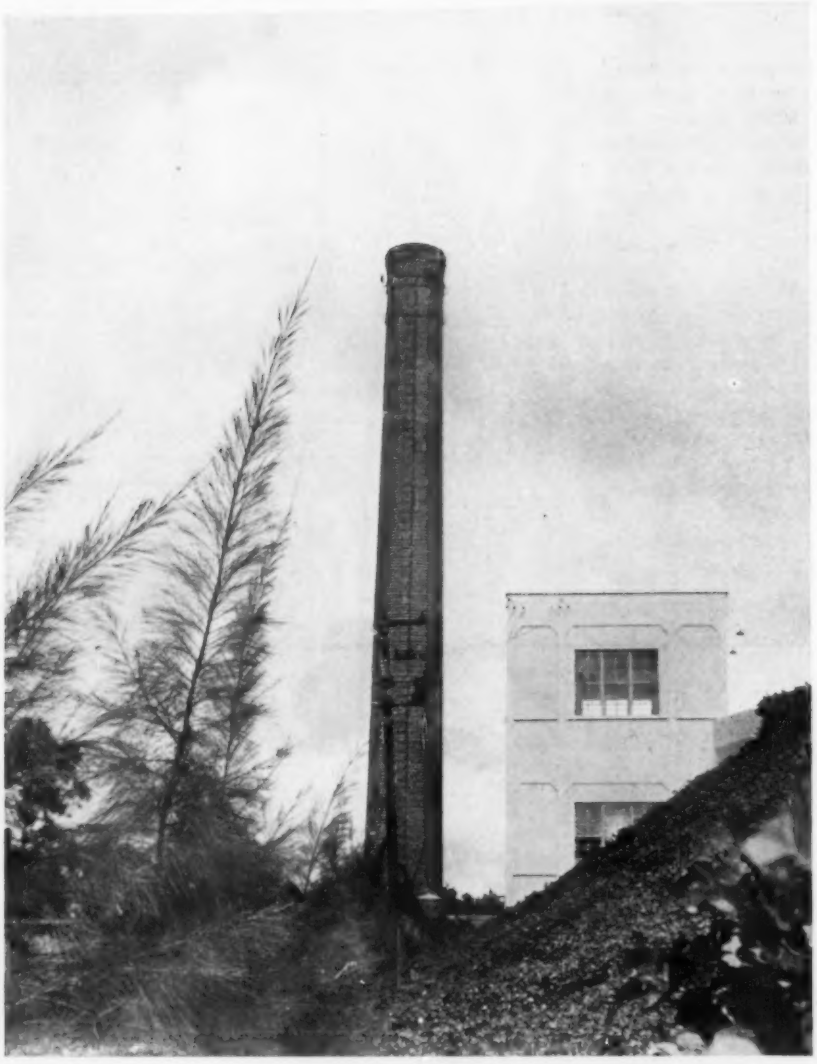
What Cities Use Fluorine?

AT PRESENT there are thirteen supplies in North America that are artificially adding fluorine to water in an effort to check dental decay in young children's teeth. These supplies are located at Belcherton, Mass.; Brantford, Ontario; Evanston, Ill.; Grand Rapids, Mich.; Lewiston, Idaho; Madison, Wis.; Marshall, Tex.; Midland, Mich.; Newburgh, N. Y.; Ottawa, Kans.; Sheboygan, Wis.; Southbury, Conn., and Wrentham, Mass.

Of these, all apply fluorine through the use of sodium fluoride except Madison, Wis. This city, because of individual characteristics in its supply and distribution system, is using hydrofluoric acid applied through a number of proportioning pumps.

Studies of Newburgh, N. Y., and Grand Rapids, Mich., are being watched carefully because of the accurate control factors that have been set up with the neighboring cities of Kingston, N. Y., and Muskegon, Mich. In these four cities, dental technicians are watching carefully the results of dental examinations of children from Newburgh and Grand Rapids, where the fluorine is used, as compared with Kingston and Muskegon, where it is not. Physicians are making similar investigations with X-ray examinations of individuals of the control cities.

Incinerator Efficiency Pays



Jacksonville's incinerator is built to a two-story design.

A NEW incinerator is going up in Jacksonville, Fla. And this incinerator is not going to cost the people of this city a thin dime more than their present refuse disposal costs. This incinerator is going to have capacity enough to meet the present increased demands of a growing city and replace facilities that are fast becoming outworn. Jacksonville knows that it can do this because it has tried out one incinerator of modern design and has observed the savings in operating costs.

The story of refuse disposal by incineration in Jacksonville began back in 1905 when this city built itself a circular-type Nye incinerator of 40 tons-per-day capacity. As requirements of nearly a half century ago would indicate, the incinerator was built for mule-cart operation, and served at that time a population of some 65,000.

This took care of the refuse problem until 1927, when the city built two more incinerators, one of 80 tons and the other of 120 tons per day. These used modern air-draft principles and served a total population of 165,000. However, repairs from year to year piled up on all three incinerators, reducing their capacity and calling for constant rebuilding.

In the meantime, despite the famous and ill-fated Florida real estate boom-and-bust of the late '20s, Jacksonville continued to grow. In 1932 South Jacksonville, an adjoining community of some 7,000 people, voted to become incorporated in the city itself. Today that same area has 45,000 people in it.

The growth of this "suburb" gave the city its opportunity to see what modern refuse-disposal methods could offer. The opportunity did not come, however, until the war years. There are two bridges across the St. Johns River connecting Jacksonville with South Jacksonville. Although the possibility seems remote now, Jacksonville officials realized that if the tides of war ran such that their city were bombed, their bridges would undoubtedly be one of the bombers' prime targets. And if these were destroyed, the communities

would have to operate with as little cross-river traffic as possible. One of the services affected would have been refuse disposal.

The city took its problems to the War Production Board, and after a little discussion was able to convince its engineers that an incinerator in the South Jacksonville area was a good municipal safety factor, and that it would also fit into the post-war life of the community. So they received priorities that enabled them to build a 120-ton Nichols Monohearth incinerator.

As it happened, of course, developments in Europe and a certain experiment in nuclear fission off the coast of Japan made the bridges safe. Nevertheless the incinerators did fit nicely into the municipal life of this city.

The incinerator receives an average of 75 tons daily on a four-day schedule: Monday, Wednesday, Friday, and Saturday. The refuse contains about 60% combustibles and the balance, noncombustibles. Although the lack of a storage pit hampers operations somewhat, the operators are able to dispose of each load of refuse handily.

Officials estimate that the incinerator burns the refuse, leaving a residue of roughly 10%. The temperature in the combustion chamber stays at a figure of 1,750 to 1,800° F. and never drops below 1,200° F. Every two weeks of operation will yield some 150 to 200 pounds of fly ash at the bottom of the chimney. This ash is high in potash and is in demand for a fertilizer.

The incinerator has been able to handle virtually any type of refuse. Occasionally, a load of spoiled potatoes will be brought to the incinerator, and despite its high moisture content it is reduced to an inert ash without difficulty. The South is noted for its watermelons, and when they are in season, the incinerator must handle plenty of these wet rinds. The plant has been able to do this job easily, reducing them to a dry ash.

Jacksonville, Fla., plans to replace two old incinerators with one designed according to modern principles, and to pay for it out of savings in operation

Most impressive has been the operating personnel required since this plant was put in operation on October 8, 1945. One foreman, one ash-truck driver, and two laborers have been all that were needed to keep the plant going. After the plant had been in operation 17½ months, Jacksonville officials had it closed down for inspection, which took 9½ hours. They found all the working parts in the furnace to be in perfect condition.

This was a big contrast to the way that the other plants in Jacksonville have been working. Those plants each required 24 laborers and a superintendent. And all of them worked hard.

This caused P. M. Ulsch, Chairman of the City Commission and in charge of this work, to sit down one evening not so long ago and do a little calculating. He added together the amount of money Jacksonville was paying for incinerator operation at the two old plants. Then he calculated how much money he would have to spend if he built an incinerator big enough to supplant these two veterans, and build it with a crane and storage bin, as good design indicates. After checking these figures carefully, he came up with the sum of $32,000 that he could save each year in labor alone, and at the same time eliminate some of those difficult, back-breaking jobs that characterize the old operation. He discovered that instead of 24 men working hard, he would need only a crane operator, a superintendent and three laborers.

Consequently, he and the finance officers of the city made an arrangement whereby the new incinerator of 350 tons per 24 hours would be built and paid for out of this $32,000-per-year savings. The arrangement specifies that the annual payments shall be no more than that, and that the incinerator shall be, in effect, leased by the city for a period of 15 years. At the end of this time, it will have returned to the builder his investment plus an interest rate of 3%. After this 15-year period, the incinerator becomes Jacksonville property.

As a result, Jacksonville is building a second incinerator, drawing again on the Nichols Monohearth design, and replacing two badly outworn plants with one new centrally located plant that is not going to cost the people of Jacksonville a cent in new taxes.

The Jacksonville incinerator, built on Spartan wartime lines, receives the refuse on a charging floor without a storage pit.

The City Tells Its Story—XI

By HENRY DAVIS NADIG, *Director of Public Relations, New York Regional Plan Association*

MPR questionnaire response shows pattern of public-relations growth

IT IS heartening to be able to report to you that more than 44% of the city managers in the United States have already responded to the questionnaire sent out by THE AMERICAN CITY for this department early last December.

I daresay there are few groups in the country that can point to such a record of promptness and interest when it comes to unofficial quizzing, as can the city managers in this instance. More power to them for their municipal acumen and public interest.

Especially interesting are the comments that about one-third of the city managers took time to jot down, particularly since a large number of these comments indicated a drive for improved MPR was under way or about to be started.

Also it is encouraging to report that eight cities claim full-time MPR departments; that there is apparently a growing use of schools, radio, films, paid advertising, and publications in addition to an overwhelming cooperation with the press; that tours of municipal facilities rate high, and that most city managers have the cooperation of citizen organizations.

The questionnaire itself with the tally of responses is shown in detail on the opposite page—for your own study and analysis. (And, incidentally, if you have any comment you'd care to make, please don't hesitate to send it along to me.) A bit of explanation is in order here, however, along with my own comment.

On the 304 questionnaires returned to date, not all questions were answered in every case. This accounts for such apparent discrepancies, for example, as the 59 *yes* for No. 2(a) as against the 108 *yes* for No. 2(b), as well as for the fact that, in this same section, the 59 *yes* and the 185 *no* do not add up to 304.

Analysis

The questionnaire was so set up, as you will see, that it proved a choice of checking either the top lines, in the cases of several-part questions, or of checking one or more of the parts, or of checking both the whole question and its parts.

If any information was given under No. 11, it went in the *yes* column; if none was given, it registered *no*. The same procedure was followed in No. 12, where if comment appeared, I rang up a *yes;* if no comment, a *no*.

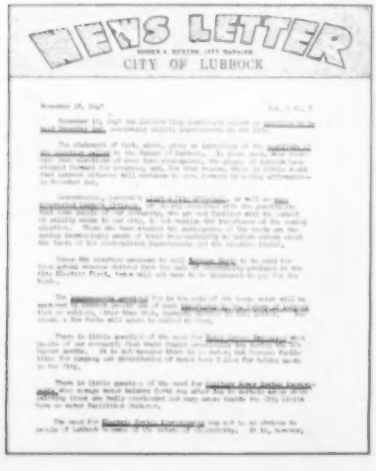
The slim *yes* column on Question No. 1 is not discouraging to me in the least; it was expected. The fact is, it shows the big plowing job that needs to be done—and the wide-open field for harrowing and sowing the good seed so that expert MPR can bear its full fruit for municipal and civic benefit.

Rochester, N. Y.; Stratford, Conn.; Kansas City, Mo.; Bessemer, Ala., and Daytona Beach, Miami Beach and St. Petersburg, Fla., reported full-time departments. I also included Norfolk, Va., where one full-time MPR man was reported employed. Las Vegas reported preparations on an MPR program to go into effect this year.

Number 2 seems to indicate a swing to frequent small publications. But it is also interesting to note that 20 cities have a regular municipal periodical. One city manager expressed a preference for the integrated annual report, rather than several (or departmental) publications.

While paid advertising is not permitted in some instances, note the three-digit *yes* in No. 3(b), aren't there many cases in which a real job can be done for municipal government through good display advertising? In some of the comments, managers said advertising programs were getting under way.

The *yes* column ceiling was hit in No. 4(c). It would have been little less than tragic for MPR and city government if the No. 4 group of answers weren't preponderantly *yes*. We have come a long way in press relations, for the most part—and the press itself must


NEWS LETTER
CITY OF LUBBOCK

From Texas and Florida came examples of two types of news letter when City Manager Homer A. Hunter of Lubbock and City Manager Claude A. Renshaw of Miami Beach returned their respective questionnaires.

Lubbock's is mimeographed, 8½ by 11 inches on yellow paper, two sides, and sent once a month to about 200 civic leaders.

Miami Beach prints its 7½- by 8¾-inch, four-page quarterly publication on light-weight coated stock and Mr. Renshaw directs its preparation, under a recent act of the City Council.

This department is always interested in examples of the fresh approach and the original treatment in publications. So shoot along anything you'd like to have come in front of this prying eye—and maybe I'll be able to give it a line of type or two.

The Miami Beach News Letter

Council Broadens Tax Base of 47-48

Projects Increase Municipal Service

CITIZENS INFORMED BY NEWS LETTER

LIBRARY PARK RELANDSCAPED

be given due credit. Incidentally, several managers said they write regular columns for the local press.

Radio, while no longer an infant, is still a child—compared with the age of the press. A look at No. 5 shows you that at least 32 cities already have regular city-government programs, to say nothing of using the air waves for special occasions. More than a few comments said that radio programs were being planned.

For a long time city government has been interesting to schools, and in most cities and towns there is some effort to take one or more phases of city government to the schools. But doesn't No. 6(a) indicate that so far city government has not capitalized fully on its opportunities to make highly profitable use of this important MPR tool?

Staging municipal exhibitions successfully is a real art, but No. 7(b) shows that 86 cities tackle the task occasionally, while three in No. 7(a) report they have permanent exhibitions. Ways will be developed, as MPR grows in know-how, so that a few years hence we may have more of the permanent type.

One of the most obvious and best ways to acquaint the public with municipal facilities is to give citizens a chance to see for themselves. A good majority of the managers answering No. 8 apparently believe this is a happy way to do a bit of good MPR.

No. 9(c), at least at this stage of the returns, ties with No. 4(c). And here, too, the *yes* column should certainly be overwhelming. But note that all is not rosy in some spots—a fact borne out in a few of the comments.

Films, particularly motion pictures, are going to be more and more useful as an MPR tool. If 53 cities now use them, as shown by No. 10(b), the number will probably be doubled or tripled within a couple of years. Their use for departmental work is especially valuable—as many of the 53 are finding out.

Most of the various municipal associations with which you are familiar were cited as sources for material under No. 11, such as the city managers, fire chiefs, police chiefs, water works and others, including THE AMERICAN CITY.

Answers to Questionnaire

	Yes	*No*
1. Do you use public relations consultants?	21	272
(a) Periodically?	21	87
(b) Year round?	4	95
(c) Full-time municipal public relations department?	8	97
(d) For individual departments only?	8	87
2. In addition to your annual report, does your municipality produce any other municipal publications?	59	185
(a) A regular municipal periodical?	20	83
(b) Occasional brochures and leaflets?	108	54
(c) Departmental publications?	56	65
3. Do you use paid advertising (aside from legal notices)?	62	180
(a) To "sell" the city as a whole?	32	85
(b) To promote specific programs?	109	55
4. Do you cooperate effectively with the press?	258	2
(a) By open council, board, and committee meetings?	257	8
(b) By press conferences?	214	20
(c) By helping newsmen with feature articles?	271	4
5. Do you use radio?	90	162
(a) Regular city government program?	32	86
(b) Spot announcements?	86	57
(c) Special occasions planned by city?	105	45
6. Do you go into the schools?	124	94
(a) As a part of regular curricula?	24	100
(b) Occasionally?	186	33
(c) Adult education "citizens" courses?	27	95
7. Do you hold municipal or departmental exhibitions?	54	202
(a) Permanent?	3	79
(b) Occasional?	86	53
8. Do you conduct occasional "tours" of municipal facilities?	168	118
9. Have you cooperation of citizens' associations?	256	10
(a) Do you seek their cooperation on questions of public policy?	250	16
(b) Do you welcome opportunities to address their meetings?	269	13
(c) Do their committees confer occasionally with you or your department heads?	271	10
10. Do you use films?	56	228
(a) Slides?	19	76
(b) Motion pictures?	53	71
11. If your officials and departments utilize material for promotion available from national associations, what sources have you found especially helpful?		
(a) Cited material	89	...
(b) Do not use any	...	210
12. Have you any general comments to offer?		
(a) Comments	108	...
(b) No comments	...	196

Managers' Comments

A good many of the comments made by city managers, under No. 12, are worth quoting, and those that cannot be included now will find place in later issues of the column. The questionnaire will be a basis for reference, I hope, for your future MPR thinking.

"Most cities are becoming increasingly aware of the importance of an effective public relations program. Certainly, some one person should be made responsible for carrying out a city-wide program."

RUSSELL E. MCCLURE
Wichita, Kans.

"The big problem in a matter of this kind is providing an instrument which will not become just another propaganda machine in which the people will have no confidence. Regardless of this problem, the need is so great that this matter must continue to be studied until some satisfactory method is devised."

LOYD E. BRADY
Hazel Park, Mich.

"We realize that public relations for a city is invaluable as you generally have very much less criticism from citizens that are informed as to the way the city functions and also they are much more cooperative."

JESS M. PARKER
Sweet Home, Ore.

"I believe the field of good public relations has been largely neglected by the smaller municipalities."

H. W. WHITNEY
Big Spring, Texas

"Public relations is the prime mover of any city manager."

W. R. WOODBURY
Suffolk, Va.

Aerial Mapping Guides Guntersville's Growth

Guntersville, Alabama, used aerial photography and stereophotogrammetric mapping to help put the growth of this community on a healthy basis

By A. J. GRAY, *Chief*
Urban Community Relations Staff
Tennessee Valley Authority

IN 1941, experiments in topographic mapping of an urban area were undertaken cooperatively by the city of Guntersville (a North Alabama community of 5,000 population), the Alabama State Planning Board, and TVA. Some of the results of these experiments, particularly the use made by Guntersville of the resulting topographic maps, may be of interest to other cities.

More than in the normal city, officials of Guntersville are faced in their daily operational problems with the area and topographic limitations of the town site. The peninsular location between two large embayments of Guntersville Reservoir confines the town to an area roughly three miles long and one mile wide. A more difficult limitation is the steep terrain over most of the peninsula.

Limitations Prove Advantageous

Limitations imposed by the town site have not been without advantages: city officials appreciate and understand the need for careful planning of future development; ordinary citizens faced with problems of land development are receptive to planning proposals; and the contour of land in relation to large water areas gave opportunities for attractive development. These factors were largely responsible for the interest of the city in adequate topographic coverage for the town.

Showed Facts About Town Development

Guntersville, one of the first small cities in the Tennessee Valley to initiate a planning program, appointed a planning commission in 1938. The commission's activities, reflecting the development problems confronting the town, devoted its full energies to land-use problems. By early in 1940, preliminary land-use and major-street-plan studies were complete.

These studies clarified certain facts regarding the town: good building sites were almost completely utilized and future residential development would be forced to locate on relatively steep terrain; the old practice of extending the gridiron street system could no longer be permitted if the remaining undeveloped part of the townsite was to be developed and if the already difficult problems of road construction, surface drainage, and utility installation were to be solved; and future industrial development should be directed to locations to the east side of the embayment which borders the east and at present industrial side of the peninsula on which the town is located.

At the recommendation of the planning commission, the Guntersville City Council authorized the preparation of a topographic map for general planning and development studies covering an area of approximately four square miles within the corporate limits and the industrial area east of the city. Although complete coverage was required over all the four square miles, detailed topographic data were not needed over most of the area.

Map Method

In seeking a method of map preparation, plane-table surveys having been discarded as too costly, the city interested the Alabama State Planning Board in the proposal. The latter agency approached TVA on the possibility of undertaking an experiment in mapping the town by aerial survey methods. For some time TVA had been interested in determining the application of the multiplex process of topographic map preparation used in the Valley-wide topographic mapping program to maps of suitable scale and accuracy for general urban use. Since much essential data, such as ground control and street information, necessary for the preparation of the map had already been collected by TVA in conjunction with the construction of Guntersville Dam and related reservoir readjustments, TVA agreed to cooperate with the State Planning Board in an experimental mapping project in Guntersville, for the work on which TVA was reimbursed by the State Planning Board.

The map work was performed by using aerial photography and the multiplex stereophotogrammetric equipment. In general, county and city engineers have not specialized in this type of work and would probably be better served by drawing on assistance from mapping and surveying organizations that do make it a specialty.

Map specifications, arrived at through conferences between representatives of the city, the Alabama State Planning Board, and TVA, called for a map drawn on tracing cloth in ink at a scale of 1:2400 (1″ = 200′), with contour intervals of 5 feet, and showing street and road rights of way, street names, platted lots, major drainage lines, and city corporate limits. The map was to be accurate within 4 percent horizontally and half a contour interval vertically.

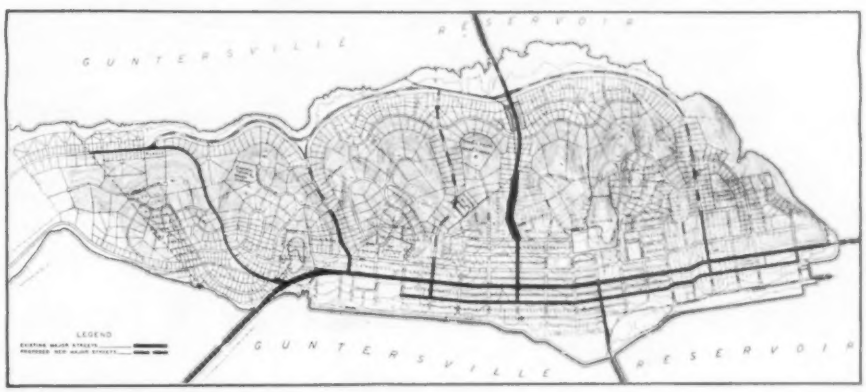
Map Preparation

The map was prepared in two steps: (1) preparation of the manuscript map from aerial photographs, and (2) redrafting the manuscript map to add rights of way, platting, street names, etc.

The manuscript map was compiled from aerial photographs taken in January 1942. This map was in five sheets at a scale of 1:2400 and contained 5-foot contours, railroad tracks, traveled roadways, principal buildings, and coordinate lines. The map was accurate, horizontally, within the limits established by the specifications. The contour-interval accuracy was determined as 75 percent within one-half contour interval.

In the second step, the five manu-

A view of Guntersville, Ala., as seen from an airplane . . .



. . . and as shown on the aerial map.

script maps were reproduced photographically. On ozalid prints of the manuscript sheets, the following items were added in pencil: the corporate limits, street and railroad rights of way, and platted lots. This step permitted adjustments of errors in old recorded plats.

Tracing directly from these ozalid prints, the following items were copied in ink on cloth: major drainage lines, corporation boundaries, railroad tracks and property lines, street and alley rights of way (opened streets in solid line; unopened platted streets in dashed line), platted lot lines, 10-foot contours, and street names. These five sheets were reduced photographically to a scale of 1:6,000 (1" = 500'), and the negatives matched to form a single map of the area covered by the project. (A film positive was secured for permanent record and reproduction of prints.) On the original ink tracings, all principal structures and the intervening 5-foot contours were added to complete the final 1:2,400 scale maps as outlined in the specifications. By this procedure, the 1:6,000 scale map was prepared at the cost of photograph negatives plus a few hours' time for assembling the separate negatives into a single map. Furthermore, each map contained contour and other information in a degree of detail appropriate to its scale.

Many City Uses

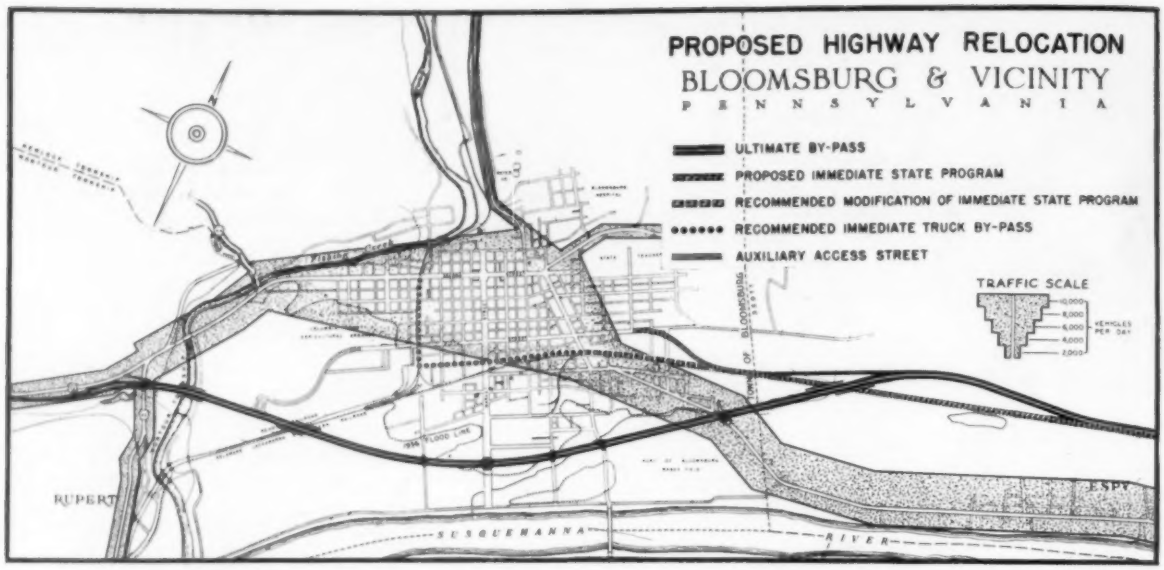
The maps have proven invaluable to the city. They have been used by city officials, citizen groups, and individuals developing proposals for specific improvements, public or private. Probably the most important use was made by the planning commission in the preparation, with the assistance of the Alabama State Planning Board, of a complete development plan for the city. This plan outlined recommendations for major streets, secondary streets, and minor streets with suggestions for subdivision of the land into building sites, and for reservations for water-storage facilities, recreation, schools, and other public uses. After study with property owners and the city commission, the plan was approved by the planning commission early in 1946. By mid-1946 the city commission obtained $12,000 in FWA funds for detailed engineering plans and for monumenting the major and secondary streets proposed. These plans are complete and have been approved by the city. Streets are being dedicated according to the plan; Guntersville is acquiring as rapidly as possible title to lands needed for public use; and the planning commission has adopted regulations which will help guide future land subdivision.

Building Officials Foundation Elects New Chairman

JOSEPH P. WOLFF, Commissioner of the Department of Buildings and Safety Engineering of the City of Detroit, has been elected chairman of the board of governors of the Building Officials Foundation for the year 1948, succeeding Andrew J. Eken, president of Starrett Brothers and Eken, New York building firm. Mr. Eken remains a member of the Board of Governors of the Foundation.

Mr. Wolff became commissioner of the Detroit building department in 1930, a position he has held since. Prior to that time he was engaged in building work in Detroit.

The Building Officials Foundation was established in 1946 to effectuate building code reform in American cities. Its address is 51 East 42nd Street, New York 17, N. Y.



The modified highway relocation program now avoids heavy traffic through good residential areas.

Bloomsburg Benefits From Activity of its Planning Consultants

BLOOMSBURG, Pa., has discovered that planning can pay dividends even before the planning consultants move off the site. It is a municipality of 10,700—the only incorporated "town" in Pennsylvania—and serves as the commercial center for an agricultural area. It also has several textile industries within its borders. The Town Council retained the firm of Michael Baker, Jr., and Clifton E. Rodgers, Planning Associates of Rochester, Pa., to prepare a developing plan jointly paid for by the Council, the school board, and several civic associations who raised their funds through a horse show.* The work of the planning staff may provide some clues to more effective use of planning consultants in other small cities.

The planning staff's office and drafting room was set up in the Town Council chambers, otherwise used only for the regular council meetings. The staff members also chose to move into town themselves rather than operate by remote control. As a result they succeeded in making themselves considerably more effective in the community.

One technique the planners used was to meet frequently with the as yet unofficial planning commission, the school board, town council, and other public and private groups. This resulted in considerable public approval of all aspects of the plan even before submission of the final report.

Because members of the planning staff were in residence, the town benefited from their recommendations when the State Highway Department proposed a relocation of Route 11, the main highway—a part of the National Inter-Regional Highway System.

The planners proposed modifications which:

1. Prevented the routing of traffic through the best residential sections
2. Opened a vacant area for industrial development
3. Provided $44,000 of additional paving at no cost to the town
4. Provided better access to both the commercial and industrial areas as well as permitting an excellent by-pass for future construction.

The completed Development Plan Report analyzed the problems of the town and provided these recommendations:

1. Highways and traffic control
2. Financially self-supporting, off-street parking plan for a major part of the peak-hour demand
3. Two new elementary schools without any increase in school taxes. (The School Board is already negotiating for acquisition of two school sites.)
4. A community recreation center as a "living war memorial"
5. A municipal outdoor recreation center
6. A complete balanced recreational program
7. A zoning ordinance and plan based upon a sound ultimate land-use plan
8. Development of new residential areas
9. Accomplishment of the proposals and improvement of the town's financial structure without increasing the real property tax
10. Organization and administration for accomplishment of the recommendations.

The development plan and program includes an unusual dual-purpose recommendation that will result in additional wooded recreational areas in the future. The previously mentioned relocation of U. S. Route 11 involved the planners in suggesting an ultimate by-pass to skirt the developed area of town and the flood plain. However, several small areas below the flood level, totaling 180 acres, would be separated from the larger agricultural areas and thus rendered unsuitable for agricultural use.

* In addition to Mr. Rodgers, the planning staff at Bloomsburg consisted of Salem S. Shapiro, chief planner; W. Wilson Horst, assistant planner, A. Edwin Bye, designer; Richard G. Amutis, delineator, and D. R. Wenner, research assistant.

Bloomsburgh's Town Planning Exhibit, located in the local utility company showroom, attracted favorable public response.

These areas would constitute a permanent threat of developing for residential or roadside commercial use subject to intermittent flooding—costly to town and property owner.

To eliminate this threat and to protect the highway, the plan recommends the acquisition of these areas by the town and their reforestation. Thus, at a minimum cost, the town will have a beautiful wooded recreational area on the edge of the built-up section. At the same time the town will protect itself from uneconomical development. In addition, this section of the proposed highway will constitute a scenic drive, for it is recommended that a 100-foot strip adjacent to the highway also be acquired and reforested. Other areas along the highway provide adequate space for development of "automobile row" establishments.

Exhibit Prepared by Consultants

But the consultants and staff, having lived in Bloomsburg for several months, felt that completion of their contract with the Town Council by the submission of the final report was not complete town planning. All recommendations, background and analyses must be brought before the public. Therefore, a town-planning exhibit was set up by the consultants. The exhibit was held in the brightly lighted showrooms of the Pennsylvania Power and Light Company, in the heart of the central business area of town.

This town-planning exhibit consisted of 100 feet of large-scale colored charts, graphs, maps, and perspectives of existing conditions and recommendations. The exhibit was open to the public from 10 a.m. to 9 p. m. daily. Public response was good and interest was high. Well-informed members of the Women's Civic Club acted as hostesses, supplemented by the planning consultants' staff, who would come in frequently. In addition, the staff had prepared, with the cooperation of the local radio station, WCNR, individual recordings explaining each element of background data and proposals. These recordings were played intermittently at the exhibit.

Slides and Radio Programs

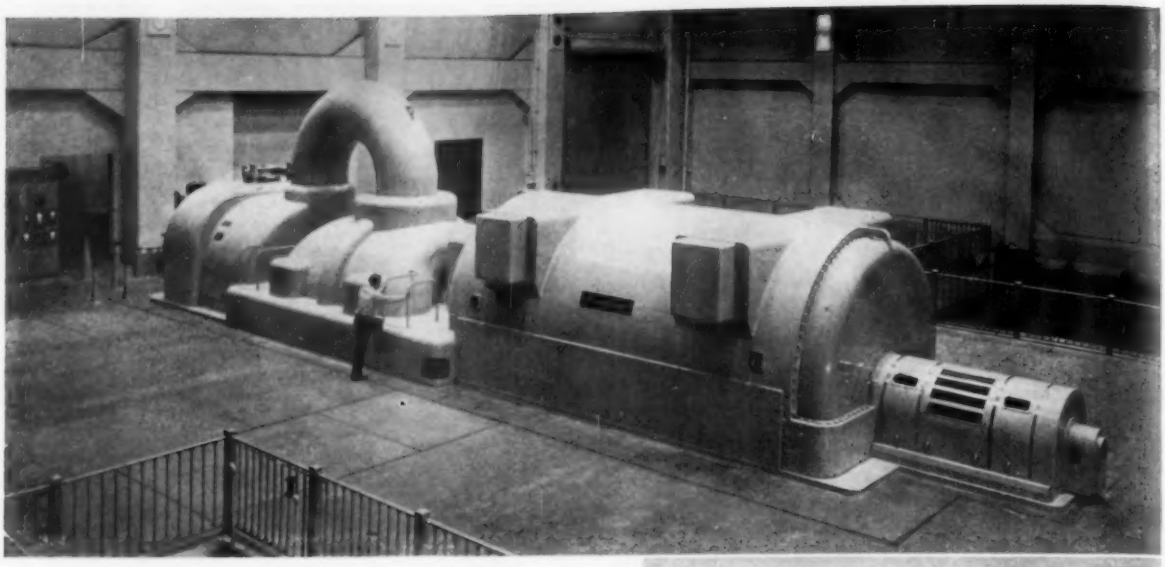
Although the planning consultant staff had spoken before many local organizations and groups, it was felt further discussion was necessary. Therefore, kodachrome slides had been prepared of each map and chart. With these colored slides and the recordings, every group in town was able to study carefully the recommendations of the planning consultants at their leisure and at their convenience.

In addition, radio station WCNR instituted a 13-week series of programs on the subject of the town plan. This was in addition to several programs upon which the consultants' staff had already made an appearance.

An Industry Promotes Its Community Relations

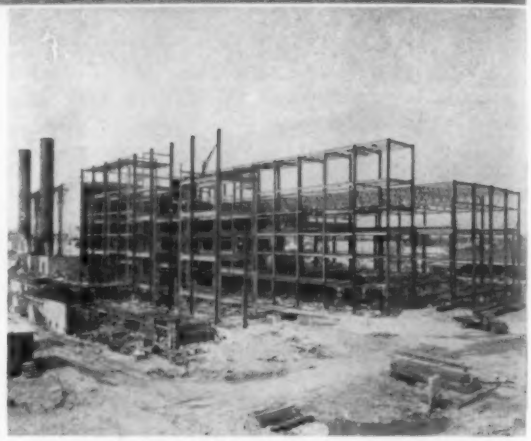
It's Great . . !
to be in Libertyville
It's great to live in Libertyville—where all the enjoyments of country living are within minutes of the "Big City."
Here in beautiful, quiet Libertyville the old customs of band concerts in the park, ice cream cones and extra thick malteds in the drug store are part of that familiar picture we associate with the good things in life.
For all of this, Libertyville is a wide-awake town, fast-growing, with fine shopping centers, schools, churches, parks and beautiful homes. Some of us work in the local industry (all our veterans are employed) and some of us commute to the "City" every day, but all of us enjoy the beauty and quiet of a peaceful, lovely countryside setting for our homes.
What more could we ask than a full life in a community that puts the individual and his happiness as the goal for civic achievement?
• • •
We are glad to be a part of this community.
THE FRANK G. HOUGH CO.

This advertisement, one of six in a series that have appeared in Libertyville, Ill., newspapers, demonstrates a unique form of public relations initiated by a local industry. Frank G. Hough, president of the company bearing his name, points out that some manufacturers forget to "sell" the people in their own home towns. Although "Hough" products aren't sold in Libertyville, he says, they are made there—and the fine cooperation of people in the town has contributed materially to the success of the company.



Los Angeles' new 65,000-kw steam turbine generator, placed in service Nov. 13, 1947.

Los Angeles Gets More Electrical Power



A progress picture showing the second addition to Harbor Steam Plant. It will house three more steam turbine generators of 75,000-kw capacity each.

LAST fall, Los Angeles' Mayor Fletcher Bowron pressed a button that packed probably the biggest punch that the Mayor ever personally delivered. It was an 87,250-hp wallop that translated itself into enough electrical power to supply a city of 200,000. This fingertip punch of the Mayor's officially opened city-owned Harbor steam electric generating plant, the second in a five-step program that will make the Los Angeles Municipal electric system the largest steam plant west of Chicago.

Averts Power Shortage

The plant went into service at an opportune time, just in advance of the city's heavy winter generation peak demand, which was expected to reach 735,000 kilowatts but which actually reached 753,000 kilowatts on December 10. This is well above the pre-war high of 464,000 in 1940, or even the war-time peak of 658,000 in 1943. The plant duplicates a unit that started operating in June 1943, just in time to avert a shortage of power that would have affected seriously the war production in the Los Angeles area. The two units share honors for being the largest machines of their type in operation on the Pacific Coast.

The plant uses a Westinghouse turbo-generator to produce electricity at 13,200 volts. It steps this up to 132,000 volts by a bank of transformers, and then sends it into a transmission network that covers the entire city.

Heart of the plant is its big Riley boiler, measuring 50 feet wide and 60 feet deep and towering to the height of an eight-story building. The boiler's ten burners produce 675,000 pounds of steam an hour at a pressure of 1050 pounds per square inch and a temperature of 900 degrees. The burners use 120 barrels of fuel oil an hour for full operation. The boilers use distilled water for steam generation. After the steam leaves the turbines, it is converted to water in twin Elliott condensers that use sea water for cooling. The condensers contain over 10,000 tubes, each almost an inch in diameter and 26 feet long. The sea water is brought into the plant from one of the harbor channels through two concrete pipes 8 feet in diameter and 1,000 feet long. After passing through the condensers, the sea water goes back to another channel in the harbor through a second pair of pipes. When the complete plant is in operation, it will use 275,000 gallons of sea water per minute. This calls for a daily use greater than is now being used for all purposes by the city.

New generating unit is a step forward in the growth of the municipal electric plant that will make it the largest user of steam for power west of the Mississippi

The boiler water has its own individual treatment plant, built by the Permutit Company, that conditions it to keep it in optimum condition when used at high temperatures. The plant also has a well-equipped machine shop for emergency repairs, an instrument repair shop, a modern chemistry laboratory, and a warehouse.

The project was completed under the direction of Samuel B. Morris, general manager and chief engineer; Charles P. Garman, chief electrical engineer and Grant E. Benkesser, engineer of design and construction. William C. Rowse was in charge of steam design; John P. Stratford headed the electrical design and James D. Laughlin was in charge of construction. The operation of the plant is under the supervision of Harry L. Caldwell, electrical engineer.

Construction is well advanced on a second addition to the building that will house three additional steam turbine generators, each with a capacity of more than 100,000 electrical horsepower. Two of the units will be ready for service by fall, the third by the spring of 1949. Over-all cost of the entire plant will run $40,000,000. Its capacity of 475,000 horsepower will make it the second largest steam generating plant west of Chicago and will supply approximately three-fourths as much energy as is available to Los Angeles from the Hoover Dam.

Another Municipal Money Saver

CHARLES CRUMP, superintendent of water and sewers in Franklin, Mass., has a new mechanical aide that has been taking the hard work out of many of his department's activities.

For the last year he has been using a Syntron gasoline paving breaker to make cuts in black-top pavement, to help with difficult ditch-digging work (particularly when it involves digging through hardpan, shale, or clay) or to tamp backfilled ditches and insure a solidly filled ditch. Usually he needs three men on these jobs with only one of these operating the gas hammer. He keeps the gas hammer on his service truck at all times.

The hammer costs his department approximately 25 cents per hour of use. On an average he uses it two hours out of each 40 that his crews work weekly. This totals $25 for a year's operation.

By using the hammer, his crews are able to do in one hour what previously took them a half day when relying solely on hand work. Since the cost of labor has risen from a prewar rate of 60 cents to the present average rate of $1.00, the gasoline hammer has quickly paid dividends.

Former Cost of Job

Formerly he used the town Highway Department compressor and air tools for work of this nature. This required two men and a truck, and took one hour to get equipment ready and transported to the job. It took another hour to return the equipment after the job was over. Thus it cost about $12 getting to the job and back, in addition to the labor and rental on the job. The equipment rented for $12 per hour.

For large jobs requiring two or more hammers, the big compressor plays a useful role. But for the average small job, the self-contained gasoline hammer does better, he feels.

The Franklin, Mass., water department serves a population of 7,300. It has 1,934 water services and 900 sewer services. The water-distribution system uses 45 miles of lines; the sewer sysem has 14½ miles of trunk sewers.

Right: This small portable hammer carries enough punch to make pavement cuts through all types of surface. Below: The hammer works well in close quarters if necessary. Here it cuts through rocks in a service-line ditch.

PHOTOGRAPHS COURTESY OF THE SYNTRON CO., HOMER CITY, PA.

Playground Design for Our High-Spirited Youth

PLAYGROUND designers have too often not kept pace with the real nature of the teen-ager and his needs, and have little excuse for blaming the rapid destruction of their designs on the youth using playground facilities, writes Arthur A. Shurcliff, well-known landscape architect, in a recent issue of *Landscape Architecture*.

City boys of a hundred years ago were destructive [he says], but their energy was pretty much exhausted by sawing and splitting wood, sifting ashes, pumping water, filling and trimming oil lamps, grooming horses in the many private stables, sweeping, shoveling, running errands, and other duties. In the push-button era of today the teen-ager has few duties which require strength and time. Consequently his thoughts of youth turn to the instantaneous joy of throwing stones, breaking windows, tearing down fences, destroying trees and shrubbery. The playground, unless supervised, becomes a great Wild West for his high spirits, idle time, and strength.

Mr. Shurcliff suggests that the playground designer should show his plans and a perspective bird's-eye view of it to authorities such as play supervisors, school teachers, local police, and other critics whose experience may help to give the teen-agers lasting enjoyment rather than momentary delight in destruction. Ugliness is inexcusable, he states, and it can be avoided by skillful use of right materials in the right manner in the right place.

To assist in policing, the playground should be opened to view from adjacent streets, Mr. Shurcliff points out, warning of hidden jogs, bends, alcoves. Loamed or planted spaces should be protected by high fences or walls having locked gates for service access. Among his other recommendations are the use of durable surfacing materials, tree guards, proper drainage, unscalable roofs and walls, and strongly built playground apparatus.

The article concludes with these three points:

1. Constant supervision during play hours is essential unless the playground is so shock-resistant and open to view by the public and by sidewalk police that other overseeing is not needed in the opinion of those who know the locality.

2. When a playground designed for supervision is not supervised, it should be closed.

3. Remember that the playground is for use by the kind of destructive boy you were. It is not a fenced concentration camp ground or prison pen. It should give all the delight which ingenuity and cooperative effort can provide under city conditions.

Housing As a Traffic Solution?

JOSEPH BARNETT, Chief, Urban Roads Division, Public Roads Administration, advocated the provision of well-planned and well-located housing as a major aid in reducing urban traffic congestion at the recent press seminar on traffic sponsored by the Public Administration Clearing House.

There is little doubt in my mind [he said] that housing people close to their places of employment will reduce traffic volume, particularly for those periods of the day when traffic congestion in most cities is the greatest; that is, in the morning and evening rush hours consisting chiefly of traffic between homes and work, whether that work location be industrial plants, commercial establishments, office buildings, or centers of trade. The comprehensive traffic surveys thus far made in more than 60 cities and parking studies made in more than 25 other cities point strongly to the work-and-home traffic as that which forms our peak traffic loads. Housing people close to their places of employment is bound to result in many walking to work; but even if it does not, reduction in traffic volume will result from two other factors. If the same number of people drive to work in their own cars, the shorter trip will result in less volume in direct proportion to the length of trip, since total traffic volume is made up not by the number of vehicles alone but by the total number of vehicle miles of travel. The other factor is the tendency of most workers to use mass transportation where the time of travel for the trip is short. . . .

Just the availability of living quarters, particularly of the rental type, with the normal percentage of vacancies which gives tenants a reasonable choice of location, should have the effect of reducing the length of trips for many workers which, in turn, reduces total volume. . . . The amount of travel across town that is being done because of the inability of families to change their location owing to the housing shortage must be appreciable.

Florida Planning Boards Expect to Federate

ANOTHER state federation of planning boards is expected to be organized as a result of recommendations made at the planning conference sponsored by the Dade County Regional Planning Board in Miami on December 13. Stuart D. Currier, executive director of the Board, reports that a great deal of interest is being exhibited among Florida municipalities in the planning field.

Discussion topics during the conference included the following subjects: "Florida Boom or Bust," "Planning Boards in Action," "Zoning Problems," "How Many Homes?", "Unified Building Code for Dade County," "Planning as a Function of Government," and "A Federation of Planning Boards for Florida."

Youngest Mayor Takes Over from Oldest

THIRTY-YEAR-OLD Robert Taylor Capeless, youngest mayor in the history of Pittsfield, Mass., took office on January 5, as attorney James Fallon, 82, oldest mayor in the city's history, stepped down after 10 years in office. That also was a record—10 years was the longest mayoralty tenure Pittsfield had ever seen.

"My sincere hope," said Mayor Capeless, "is that when my time to leave office has come, I can step down with as clear a conscience as my predecessor has this morning. He has brought great honesty and integrity to this office."

California Planners Merge with National Organization

MERGER of the California Planners' Institute with the American Institute of Planners was completed at the January meeting of the latter organization in Chicago. The 15-year-old California group of 144 professional planners, headed by Harry E. Bergh, land planner with the Orange County Planning Commission, became the fourth official chapter of the AIP. Other regional groups now exist in Washington, D. C., Chicago, and New England.

Chicago's planning and housing programs received most of the attention during the meeting. H. Evert Kincaid, retiring executive director of the Chicago Plan Commission, chaired a discussion devoted to various aspects of the Chicago master plan. Carl L. Gardiner, former head of the planning division, will succeed Mr. Kincaid, who is entering private practice. Special interest was shown in the Central South Side Planning Program, described by Reginald Isaacs, planning director of Michael Reese Hospital.

Newly elected officers of the American Institute of Planners are Frederick J. Adams, president; Charles B. Bennett, vice-president, and Harold M. Lewis, secretary-treasurer. New members of the Board of Governors are Earl O. Mills, retiring president, John T. Howard, Robert B. Mitchell and John Nolen, Jr.

This construction view shows the "Army Base" plant nearing completion. In the foreground are the sedimentation tanks. The administration building is at left, and the structure at the right, with the steel framework in place, will house dried sludge that is made available for fertilizer purposes.

Hampton Roads' Treatment Plant Progress

ONE of the largest sewage treatment plant projects under way today is the construction of three plants being built by the Hampton Roads Sanitation Commission, with headquarters in Norfolk, Va. These plants will correct problems that have been creating a health menace and an economic loss for the past 25 years. The discharge of raw sewage into Hampton Roads has meant, in addition to other important but detrimental developments, the condemnation of large oyster-producing areas.

Of the three plants being constructed, the one nearest completion is "Army Base" plant, built near large naval and military establishments. It, like all the others, employs sedimentation and chlorination principles which engineering studies indicate to be adequate for the dilution factors involved.

The largest of the three is the Lamberts Point plant, representing an investment of $1,500,000. It is at this point that the Commission's operating headquarters will be located. These two plants together will treat all sewage contributions from the City of Norfolk and nearby developments in Norfolk County.

Will Have Sludge Elutriation

The $1,250,000 Boat Harbor plant serving Newport News and nearby counties, now roughly 25% complete, will incorporate elutriation as a special feature in order to condition the sludge and make it more easily dewatered by the vacuum filters. At the present time, the designers are undecided about the method of disposing of the sludge. Because of its being only primary sludge, it lacks some of the fertilizer qualities that agronomists feel is desirable; however, its humus quality, difficult to measure scientifically, will make it useful where land needs this sort of soil building.

At the present time, it is estimated that about 53 million gallons per day of sewage, containing some 45 tons of suspended solids, is being discharged into the Hampton Roads and its tributaries within the metropolitan district. This is to be treated by four plants—three in the district outlined above and one in Portsmouth.

What the Plant Will Do

The Lamberts Point Treatment Plant in Norfolk has a minimum capacity of 20 million gallons per day and the other three a minimum of 12 million. Portsmouth is not a part of the District, but it is erecting its own treatment facilities in full cooperation with the Commission and has stated that it will adopt the same rates and regulations.

It is estimated that an average of over 240 billion gallons of tidal water flow into the Hampton Roads daily. In other words, each volume of sewage will be diluted in over 4,500 volumes of water which will be able to effect digestion and assimilation of sewage of a volume far greater than at present, and without creating nuisances other than that of floating matter and of sludge banks.

In fact, it is improbable that the oxygen requirements of the present volume of sewage would appreciably affect the dissolved oxygen content of the tidal waters, as atmospheric reoxygenation in the broad expanse of Hampton Roads and adjacent waters would satisfy the requirements. Clarification of the sewage will be required to remove waste material that would float upon the surface and to remove settleable solids which would be dispersed by the tides and tend to form sludge banks in channels and along the shore. This can be accomplished by primary treatment consisting of screening and sedimentation. This treatment will also effect a reduction of some 30% in the oxygen demand of the sewage and in the bacterial content.

The district covers an area of 1,100 square miles, about 110 of which is thickly populated. The activities of the Commission are directed by a Board of five members appointed by the Governor of Virginia. The present commissioners include J. C. Biggins of Newport News (chairman); James S. Darling of Hampton; Robert M. Hughes, Jr., of Norfolk; James N. Garrett of Norfolk County, and E. T. Gresham of Norfolk. Heading the administrative and technical functions are R. W. Digges, general manager and D. K. MacKenzie, chief engineer. The sewerage improvements were built with the assistance of the Federal Works Agency.

Colonial Heights, Va.

Declares Water Works Independence

The spadework of Colonial Heights waterworks independence goes forward. At left is the twin settling basin. At far right, the form work for the filter plant goes up. In the background is the Lakeview Dam.

Abandons cross-river supply, with no reserve capacity, for new independent filter plant now under construction

COLONIAL HEIGHTS, Va., located along the north side of the Appomattox River overlooking Petersburg, has an important place in the history of our country. From these parts came some of the first strong action for an independent nation. The cannon used in 1788 by our French compatriot, Lafayette, to blast the British from their inferior position in the Appomattox River basin, were craftily concealed in a boxwood hedge located along what is now Carroll Avenue in Colonial Heights.

For the past decade, this town of 5,000 depended for its entire water supply upon a single cast iron main located beneath the deck of the Appomattox River bridge. This wholesale supply came to town from Petersburg, across the river, reputed to be the first town mapped in Colonial Virginia.

Colonial Heights did own its distribution system, and served its 1,300 metered-water users with the purchased Petersburg water. However, Colonial Heights had no storage capacity and a failure either at the bridge or at any place in the single supply main would leave these 1,300 users completely without water. Moreover, pressures are so low in this feeder main that the town still is required to operate booster pumps at all times except during off-peak periods. Colonial Heights decided that the present was none too early a time to declare its water-supply independence, and through the able leadership of Fred R. Shepherd, Mayor, finances for an independent water supply were provided.

What "Independence" Involved

Commendable as this action was, it entailed difficulties in establishing and developing a suitable source of water supply. Shallow wells did not provide the answer because of a relatively thin covering of coastal-plain sedimentary deposit over the granite bedrock. Deep wells could provide the volume; but water from them had an undesirable high quantity of iron and entirely too much fluorine, even for the mass medication experiment that so many cities are conducting to see whether fluorine has any effect in controlling dental caries in children's teeth. The content that the deep-well water would carry, they discovered, would stand an excellent chance of mottling the childen's teeth brown as well as protecting them.

Neither could Colonial Heights develop a suitable raw-water supply from the Appomattox River without risking lengthy negotiations with Petersburg and a local power company for riparian rights. Still another source, the old Town Creek and a series of abandoned gravel pits along the Appomattox River, had to be ruled out because of inadequate flow and the possibility of salt-water percolation during high tides into the abandoned pits.

The Swift Creek Supply

However, another source of supply was available. Swift Creek, a small stream draining a watershed of some 180 square miles of sparsely settled area, offered a possibility. The area had never been settled very thickly, and probably never would. It is well timbered and thus relatively free from soil erosion. Moreover, a modern, buttress-type dam had been constructed on this watershed about a mile north of Colonial Heights some 20 years previously, but had never been used. The lake stored roughly 130 million gallons of water that could be safely drawn upon

and was reinforced by another lake 8 miles upstream that stored some 50 million gallons more in the upper 2 feet that could be used in emergencies. This upper lake furthermore acted as a sort of silting basin, thus insuring long life in the lower area. An analysis of the water showed it to be somewhat high in iron and color and relatively low in pH, but none of these presented problems that an adequate filter could not meet. Consequently the town council, upon the recommendation of its consulting engineer, moved to acquire this dam and the adjacent property necessary for a filter plant.

Suitable Topography

The topography of the area acquired was well suited for a filter plant site and grades were established to permit a gravity flow to the plant until a draw-down of 3 feet below weir level had been reached. The raw water is to be pumped for draw-down between 3 feet and 10 feet below weir level of the dam.

The only other hurdle that remained was that of building the filter plant and supplying elevated storage. The town's engineer designed carefully to afford a maximum in simplicity and permanence, in order to offset high construction costs. A plant capacity of 1 mg per day is required to meet the present demand of the town and adjacent consumers when operating for one shift per day.

The plant was designed in two units, each 0.5 mgd and arranged so that additional units of 0.5 mgd could be installed as the occasion required. Two Roberts Filter units of 180 square feet each, with Wheeler false bottoms, are provided. A vertical-type Peerless pump in the 90,000-gallon clear well provides for backwashing the filters.

Three Omega dry-feed machines feed alum, lime, soda ash, and/or activated carbon as conditions require to the raw water as it flows by gravity to the mixing basins. Mechanical mixing is provided by vertical-type constant speed mixers in twin basins, constructed as a part of the sedimentation basin. The settling basin, constructed in two units, provides four hours' detention at the 1.0 mgd-rated flow. Chlorination through Wallace and Tiernan vacuum-type chlorinators can be provided either as the raw water enters the plant or as the finished water enters the clear well, depending on the type of treatment the operators finally select. Milk of lime is to be fed into the clear well for final pH control.

250,000-Gallon Storage

The system includes a double ellipsoidal all-welded steel elevated storage tank of 250,000-gallon capacity floating on the line and located near the center of the town. The tank is connected with the filtration plant by 12,000 feet of 10-inch and 12-inch Transite pipe. Until the elevated tank, being built under contract with the Chicago Bridge and Iron Company, is completed, a manually controlled horizontal centrifugal pump is provided to operate constantly at a rated capacity of 50 gpm to maintain pressures during the offpeak periods.

Two vertical-type 350-gpm pumps, automatically controlled by Automatic Control Company equipment, begin operating in series when water demand exceeds the output of the 50-gpm pump, and cut out in the same fashion when pressures equivalent to high water level in the elevated tank are reached. An altitude valve is provided at the base of the tank to prevent overflow.

A needle valve and snubber in conjunction with a small pneumatic tank is located in the line between the pump discharge and the automatic controls to minimize surge action from the closed system when the altitude valve automatically closes.

The plant was designed and supervised by Warren G. Perrow, consulting engineer, Richmond, Va. The installation of all pipelines and construction of the filter-plant building is being done by the town's forces under the supervision of J. H. Hardy, construction superintendent for Colonial Heights.

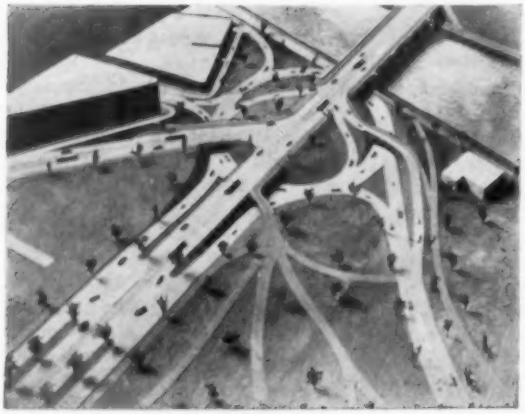
Street on Fire

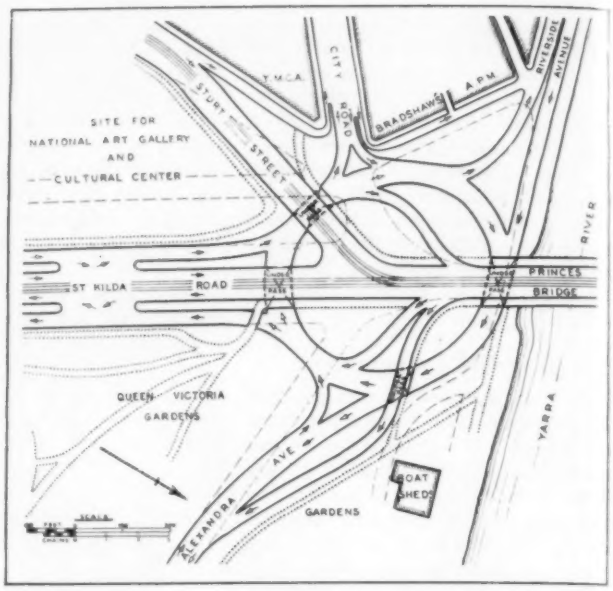
BURNING up the road took a literal meaning out in Brits, South Africa, last fall. Municipal engineers, experimenting with a highly volatile additive, found their test marred when a whirlwind whisked some lighted papers from a fire made by a native behind a shop and ignited the street surfacing.

The fire was checked, the *South African Municipal Magazine* reports, after sand was thrown on the blaze.

A close-up of the Lakeview dam spillway. The dam impounds water to a depth of approximately 22 feet. Principal two sluice gates are located in abutment at far end of dam. A third gate for silt removal is located at stream bed near center of spillway.

An Australian Traffic Circle





That cities in the United States have no monopoly on ingenious solutions to traffic separation and movement problems is demonstrated by this model and plan of a "Proposed Roundabout and Underpasses," to be located south of Prince Bridge, Melbourne, Australia. This comprehensive study of the main southern approach to the city is by P. S. Robinson, city engineer.

Telling the World

Types of slogans used by cities in the United States

IN THE characteristic American tradition of salesmanship, municipalities, like private business concerns, are increasingly using trademarks or slogans in connection with their promotional activities. The Commercial Organization Department of the Chamber of Commerce of the United States has issued a compilation of slogans in use by various towns and cities throughout the United States, gathered in a 1947 survey among local Chambers of Commerce.

Arizona cities lay emphasis on the salubrious climate—"Tucson, the Sunshine City," and "Yuma, the Sunshine Capital of the United States." Places in California and Florida do the same. Duluth, Minn., is the "Hay Fever Haven of America."

Commonly used are slogans conveying the idea of friendliness and hospitality, variations being: "Olean (N. Y.), The Friendly City"; "A Friendly City," Vinton, Iowa; "The City of Friendly Folks," Newberry, S. C. Many cities emphasize residential desirability: "A Place of Good Abode," Memphis, Tenn.; "A Good Place to Live," Ponca City, Okla.; "The City of Happy Homes and Hospitality," Holdredge, Nebr. "City of Homes" is used by both Springfield and Melrose, Mass.

Cities specializing in the manufacture of a particular product convey that fact in their adopted slogans; some samples are: Grand Rapids, Mich., uses "Furniture Capital of America;" Tulsa, Okla., claims to be the "Oil Capital of the World." Richmond, Va., proclaims itself the "Cigarette Capital of the World," Lawrence, Mass., "Worsted Cloth Center of America," and Lewiston, "The Industrial Heart of Maine."

Proximity to metropolitan centers is another theme — more conservatively stated by Norwalk, Conn., "55 Minutes from Grand Central," than by Rutherford, N. J., "A Model Suburban Town Twenty Minutes from Broadway," or Hoboken, N. J., "4 Minutes to Broadway."

One of the most be-sloganed cities is Cambridge, Mass. It is credited with four slogans in the U. S. Chamber of Commerce list: "Nothing Stops Cambridge," "What Cambridge Makes Makes Cambridge," "It's Smart to Live in Cambridge," and "Cambridge—Famous in History, Prominent in Education, Leader in Industry." To these may be added another, used on the front cover of a recent booklet of the Cambridge Civic Association: "Cambridge, a Great Place to Come Home To."

GERTRUDE PAWLEY

William H. Kershaw Retires

WILLIAM H. KERSHAW, assistant general sales manager of The Texas Company, has retired after 37 years of service with the company. He is a resident of Forest Hills, N. Y.

Born in Bridgeport, Conn., in 1883, Mr. Kershaw began his career with the eight-year-old Texaco organization in 1910 as a road engineer after several years' experience in civil engineering, which he had studied at the University of Pennsylvania. Two years later, he became manager of the company's Paving and Roads Division, later the Asphalt Sales Department. Under his guidance, the Texas Company became the largest manufacture of asphalt and roofing products in the world. He was appointed assistant general sales manager in 1936 and assumed general administrative duties. During the war he was in charge of Texaco's domestic sales and served on many petroleum industry committees. For years Mr. Kershaw has supervised the company's advertising activities, particularly in the field of radio.

Goodby to Gloom!

A plea for the increased use of color in redecorating our older public buildings

By DE LYLE P. RUNCE
Director, Library Public Relations
City of Grand Rapids, Mich.

TODAY, throughout the length and breadth of our unpredictable U.S.A., the life span of our individual public and institutional buildings is stretched on, and on, and on. We are told, and rightly so, that veterans' housing must come first. Then again, financing is usually an insurmountable difficulty. Finally, material shortages and construction delays constitute additional problems. For these and other reasons, buildings that should have been replaced or rebuilt before the war are still groaning through each day's service. New public buildings seem few and far between.

So we continue to get by with our obsolete buildings. The public library retreats deeper and deeper into the gloom of its ivy recesses. The city hall, too often, grows shabbier and more decrepit. Our fire-trap schools dim out their pupils' vision with inadequate illumination. Churches pass out fans in the summer instead of installing air conditioning.

The picture isn't as black as this in some communities; in others it is actually worse. This article is advanced as a plea to make our public buildings wake up and live. One simple, inexpensive solution is found in the application of a single five-letter word: *C-O-L-O-R*. Naturally it isn't the solution to all the problems of age and depreciation. It can, however, furnish a stimulating comeback for a building whose interior is in the doldrums of antiquity.

The Ryerson Library—An Example

An outstanding example of the miracles color can perform in livening up a public building is found in the Ryerson Library, main building of the Grand Rapids, Mich., public library system. This building is a substantial masonry building that was completed in 1904. Although decorated with all the fol-de-rol of that period, excessively ornate by today's standards, the building is still basically and architecturally acceptable.

As in other public buildings over 40 years old, the interior grew more outmoded than the exterior. Inside, the building was drab and dark, the walls stained by the dust and grime which inevitably accumulates through the years. The library's staff found it was next to impossible to generate any feelings of warmth and hospitality toward visitors and patrons, who were usually in too much of a hurry to get out of the depressing atmosphere.

The present librarian, Donald W. Kohlstedt, took over the library's administration in 1941. One of his first decisions was to get the main building out of the "morgue" classification. Something had to be done to lift it out of the gloom of complacency and old age. The budget was, as it is for many public institutions today, a restraint upon any scheme of drastic remodeling. So he decided to redecorate.

Now there is no magic power in the word "redecorate." The building had already been subjected to that operation a number of times in the past. But each time the drab grays and dirty whites just got piled thicker and thicker on the walls. The furniture, too, had been refinished. Each time it took on a darker, more dreary, depth of tone.

No, just an ordinary redecoration job wasn't enough. What the inside of the library needed was a complete face lifting, something to jive up its spirits and give the place new life. Being a librarian and not a professional interior decorator, Kohlstedt did what more administrators should do. He called in Everett Brown, a decorator who is an authority in color design.

"Modern" Colors Used

Mr. Brown, color-coordinator for the Grand Rapids Furniture Makers Guild, volunteered to help with the crusading. At that time he was evolving the 14 colors that are now called the "Guild" paints, and he set about helping Mr. Kohlstedt achieve something new in decorating large public rooms. Together they studied each room—its location, exposure, use, illumination. Then they set about selecting "modern" colors that would give to each room an individual personality.

The job is finished now.* Its effects are being felt throughout the country. The selection of such colors as geranium red, bottle green, and hickory brown may, in the minds of the "old school," be a bit unorthodox for a library. The results are, it is true, startlingly different. Actually, these modern colors have given the 43-year-old Ryerson building an entirely new lease on life. Youthful buoyancy and friendly warmth are now an integral part of the library's interior.

Interior 40 Years Younger

Instead of being just another public building, Ryerson library today boasts the interior of tomorrow. It has pointed the way for public buildings now suffering from humdrum mediocrity—and for private buildings, too. Patrons bring in their painters and say, "Those are the colors I want in my home!" People turn over the blond chairs in the newly refurnished Fiction Room (popularly dubbed the "fashion" room) to see by whom they were manufactured. Administrators and architects query the staff for their reactions to the new lighting system.

Yes, color can be one effective solution to the pressing problem of brightening up aging buildings still in service. Originally, the architect's creation of these buildings on the planning board was fresh and new. Through the years, however, time, neglect, and indifference have left us with drab, spiritless nonentities. A coat or two of paint, *decoratively* chosen, can help revive much of their original beauty.

The lesson taught at Ryerson Library can be applied or adapted to every old public building in the United States, whether it be New York City; Bastrop, Texas, or Tacoma, Washington. Life can be a dickens of a lot more exciting if we wrap up our surroundings in color.

Look about you. Where will you start?

* THE AMERICAN CITY regrets that it cannot reproduce photographs showing in color the interior views of the building. However, upon request to the Grand Rapids Public Library (Grand Rapids 2, Mich.), four excellent colored postcards showing the redecorated rooms will be sent free of charge to subscribers.

A Skeptic Defines Civic Progress

"Civic Progress is a noble idea which can be achieved in any community so long as it preserves the status quo, does not interfere with established business or political customs or profits, costs little or no money, takes very little time of the civic or political leaders, but gives them public credit for progressive leadership and foresight."

Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.
With the assistance of Frank B. Williams and Edward M. Bassett

Garden Center as a Recreational Purpose

ARIZONA—*Moore* v. *Valley Garden Center*, 185 Pacific (2d) 998 (Arizona Supreme Court, November 3, 1947).

In this case a tract of land, acquired for park purposes, was leased for ninety-nine years by the Phoenix Parks, Playgrounds and Recreational Board to a non-profit corporation called Valley Garden Center. Under the terms of the lease, the Garden center was to pay rent of one dollar a year, to build a clubhouse and horticultural gardens at an approximate cost of $25,000, to maintain a horticultural library open to the public, to sponsor junior garden clubs and make the premises available to the public school system in Phoenix, and to turn back the premises together with improvements to the City of Phoenix at the end of ninety-nine years. A taxpayer brought an action for a declaratory judgment voiding this lease, and argued the case on two grounds. First, the procedure prescribed in a general section of the Phoenix City Charter, authorizing the city to lease buildings at public auction and at the highest possible rent, was said to be required. Second, it was argued that this lease was not for recreational purposes, and was beyond the Board's power to make in this instance. Both the lower Court and the Arizona Supreme Court granted summary judgment for the defendant.

In the opinion, the Arizona Court held that a botanical garden and library, along with dozens of other similar uses which were listed, constituted a recreational use of land for park purposes. Since this lease was therefore properly made under the Board's power to lease land for such purposes, there was no need to consider the general provision in the Charter for leasing other types of land for other purposes.

Boarding Houses As "Dwellings"—Covenants

VIRGINIA—*Schwartzenschild* v. *Welborne*, 45 South Eastern (2d) 152 (Virginia Supreme Court, November 24, 1947).

Under the restrictive covenants covering a lot in Richmond, improvements on the land were limited to one or two "dwellings." (Incidentally, the same covenant contained a racial restrictive clause.) In 1943 the area was re-zoned from a highly restricted residential zone to an "E Multiple-Family Dwelling District." In 1945 the owner of the lot began renting out rooms in her house there, and for a while also served meals. Official permission was obtained to operate first a boarding house and then a hotel, the latter apparently in order to obtain a telephone, and the owner also advertised as a boarding house. When an action was brought for violation of the restrictive covenant on the ground that a boarding house could not be a "dwelling," the owner alleged in the answer that roomers were taken only for a long period and consisted of "a very select number of persons . . . of the very highest type as is indicated by the following names: . . . " It was admitted that the inhabitants were orderly and the building well kept up.

In affirming a lower Court decision, the Virginia Supreme Court held that the definition of a "dwelling" was not limited to a house used only by the owner and his family, but also included the particular boarding-house arrangement here involved. The Court expressly differentiated this situation from a general tourist home, and even refused to pass upon the practice of serving meals.

Public Hospitals

SOUTH CAROLINA. *McClure* v. *McElroy*, 44 South Eastern (2d) 101 (South Carolina Supreme Court, September 3, 1947).

A hospital district was set up by special statute to build and operate a public hospital in Union County, and its power to issue bonds was confirmed by special constitutional amendment ratified by a referendum. A taxpayer began an action challenging the project upon a variety of constitutional grounds. In reviewing these, the Court held first that a public hospital was a proper county purpose. The hospital district board's power to fix the necessary tax rate, under the statutes levying taxes to support the hospital, was held not to be an improper delegation of governmental power. The long series of steps taken to ratify the project were reviewed and were interpreted as constituting complete and proper ratification of the whole scheme. Finally, the qualifications (in particular the medical qualifications) established for members of the board were also upheld, over the extraordinary objection that the legislature could not add additional qualifications for public officials over those prescribed specifically in the State Constitution.

Building Lines—Arkansas

ARKANSAS—*City of Stuttgart* v. *Strait*, 205 South Western (2d) 35 (Arkansas Supreme Court, October 27, 1947).

In 1946, an ordinance established a building line 17½ feet back from the street along both sides of the business section of Main Street in the City of Stuttgart, Arkansas. The ordinance recited the traffic and fire-prevention hazards involved in a crowded street. An action to enjoin its enforcement was brought by the prospective builder of an office building. Since the city had not adopted the statutory plan in Arkansas for creating a planning commission—which contained the only express provision authorizing cities to regulate building lines—the municipality fell back upon two older general statutes granting power to regulate the construction or removal of buildings.

In the opinion, the Arkansas Court held that these general statutes were concerned only with the character of buildings and not with their location. Since the establishment of building lines might deprive an owner of the use of a large section of his property without any compensation, the Court thought that such action could be authorized only by a very explicit legislative provision, not present here.

Zoning for Airfields

NEW JERSEY—*Ridgewood Air Club* v. *Board of Adjustment of Village of Ridgewood*, 55 Atlantic (2d) 100 (New Jersey Supreme Court, September 22 and October 17, 1947).

In this case the regulations for the one-family residential zone, under a zoning ordinance in effect since 1931, expressly permitted an

"Avation field not conducted primarily for gain and without shops, eating places or other commercial activities, and subject to the approval of the Board of Adjustment and such regulation as that Board may prescribe."

A non-profit club sought permission to use a 100-acre tract for a noncommercial airfield, first from the Superintendent of Buildings and then from the Board of Adjustment set up under the above ordinance. Permission was refused in both instances. In the proceedings before the Board of Adjustment, apparently no satisfactory map of the layout was presented; and the Board was not satisfied as to the methods of construction and operation to be used, as to proper safety measures, and as to the financial responsibility of the club. After the papers were filed with the Board of Adjustment, the ordinance in question was repealed, with no provision at all in the repealing ordinance for the establishment of an airfield in this zone. On appeal to the courts the club argued that the enabling act for zoning did not authorize regulation of aviation fields, and also that it was beyond the scope of the zoning ordinance to regulate the use of lands.

After deciding to ignore the repealing ordinance and decide the question presented on its merits, the Court held that on this record the Board of Adjustment had no alternative to rejecting an application made with such proofs. It was also held that two arguments raised on appeal had already been adversely decided in N. J.

Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Airports—Exclusive Taxicab Franchise Upheld

In injunction to prevent solicitation of bus passengers at Dade County airport, where county had granted exclusive taxicab franchise to other company, held that such exclusive franchise was valid and injunction properly granted. *Miami Beach Airline Service* v. *Crandon*. 32 So. (2d) 153 (Fla., Oct. 7, 1947.)

Building Permits—Revocation After Work Commenced

In action to review denial of variance, held that Village of Tuckahoe is not estopped from revoking an illegally granted building permit, even if contractor had worked for 10 days on construction. *Wyler* v. *Eckert*, 73 N.Y.S. (2d) 789 (N. Y. Sup. Ct., Westchester Co., May 27, 1947).

Cemeteries—Tax Exemption—Distinguished Operation for Profit

Where corporate set-up, management, and directorate pointed to effort to operate cemetery property on profit basis, held that such property was not entitled to city tax exemption. *City of Clifton* v. *State Board of Tax Appeals*, 55 Atl. (2d) 58 (N. J., Sept. 25, 1947).

City Council—Right to Compel Attendance of Witness at Investigation

Where city council of City of Yonkers was investigating municipal affairs, held that attendance at hearings of witnesses could be compelled by subpoena. *Applications of Frank*, 72 N. Y. S. (2d) 285 (N. Y. Sup. Ct., Westchester Co., June 7, 1947).

City Employes—Service in Merchant Marine as Service in "Armed Forces"

In mandamus to compel reinstatement, held that city policeman's service during war in merchant marine was not service in "armed forces" under city charter preserving seniority rights. *Redding* v. *City of Los Angeles*, 185 Pac. (2d) 430 (Cal. App., Oct. 17, 1947).

Colleges—Tax Exemptions—Unreversed Supreme Court Ruling As Applied to Subsequent Years

Where Supreme Court had held college property tax exempt for year 1944, held that where such ruling was unreversed and use of property remained unchanged, exemption was applicable to 1945. *City of Hoboken* v. *Stevens Institute of Technology*, 55 Atl. (2d) 231 (N. J. Dept. Tax., Sept. 2, 1947).

Electric System—Operation as Proprietary Function—Tort Liability

In action to recover for death of horse caused by negligent exposure of high-tension wire of city electric-power board by city employe, held that board was liable since operation was in city's proprietary capacity. *Nashville Electric Service* v. *Luna*, 204 S. W. (2d) 529 (Tenn., Oct. 6, 1947).

Gross Receipts Taxes—Failure to Object to Payments to City of Illegal Levy

Where taxicab companies paid illegal gross-receipts taxes to city without objection and where companies could have availed themselves of existing declaratory judgment law but failed to do so, held that they were barred from recovering such taxes in declaratory judgment action brought two years later. *City of Corpus Christi* v. *Crow*, 204 S. W. (2d) 678 (Tex. Civ. App., July 9, 1947). Reh. den. Oct. 8, 1947.

Incorporation—Exclusion of Part of Township—Lack of Homogeneity

Where township petitioned for incorporation and court granted incorporation of part of township, held that court did not abuse its discretion by not incorporating all of township where it was shown that there was no homogeneity or community interest in that portion not incorporated. *Petition of Borough of Whitehall*, 55 Atl. (2d) 70 (Pa. Super. Ct., Sept. 29, 1947).

Intoxicating Liquors—Statutory Limitation on Number of Licenses

Where number of outstanding licenses to retail intoxicating liquor exceeded, at time of passage of statute, number authorized therein, held that city could continue to issue equal number of licenses. *Smith* v. *City of Whitewater*, 29 N. W. (2d) 37 (Wis., Oct. 14, 1947).

Jails—City Liability for Death in Fire

In action to recover for death caused by suffocation in fire in city jail, held that city was not liable where deceased was allegedly assaulted by city police officers and wrongfully incarcerated. *Gentry* v. *Town of Hot Springs*, 44 S. E. (2d) 85 (N. C., Sept. 24, 1947).

Parking Meters—Authority to Install

In certiorari proceedings to review act of Common Council of City of Minot in enacting and enforcing city ordinance providing for parking meter zones, held city had right, in exercise of power to regulate use of streets, to pass ordinance providing for parking meters. *State ex rel. Dreyer* v. *Brekke*, 28 N. W. (2d) 598 (N. D., Aug. 6, 1947).

Parking Meters—Installation by City On County Property

Where city originally conveyed area to county for erection of public buildings, and strip of ground surrounding such area was used for many years as public sidewalk, held that city had authority to install parking meters on such strips. *Graves County* v. *City of Mayfield*, 204 S. W. (2d) 369 (Ky. App., June 13, 1947). Reh. den. Oct. 10, 1947.

Parks—Destruction of Public Use by Cutting Trees

Where college, as trustee, held public park, and to prevent spread of insects cut certain trees from park but did not interfere with public use thereof, held that park did not lose its tax-exempt status thereby and town would be enjoined from maintaining tax-collection action. *President and Fellows of Middlebury College* v. *Town of Hancock*. 55 Atl. (2d) 194 (Vt., Oct. 7, 1947).

Pinball Machines—Operation Prohibited—Ordinance Upheld

In action to declare ordinance prohibiting operation of pinball machines void, held that city, under its charter powers to suppress disorderly conduct and maintain public peace, could pass such ordinance. *Baker* v. *City of La Fayette*, 44 S. E. (2d) 255 (Ga., Sept. 6, 1947).

Pinball Machines—Table Games and Marble Games Prohibited in Business Places

In action to enjoin enforcement of City of Laguna Beach ordinance prohibiting maintenance of any table or marble games in business places or other places of public resort, held that such ordinance is not invalid as unreasonable. *Sharpe* v. *Johnson*, 185 Pac. (2d) 340 (Cal. App., Oct. 17, 1947).

Policemen—Duty to Surrender Photographs and Fingerprints After Acquittal

In mandamus to compel surrender of photographs and fingerprints by person acquitted of misdemeanor in City of Indianapolis, held that statute providing for fingerprinting and photographing persons accused of crime did not violate any constitutional privileges or immunities of citizens. *State ex rel. Mavity* v. *Tyndall*, 74 N. E. (2d) 914 (Ind., Oct. 10, 1947).

Policemen—Failure to Suppress Gambling—Necessity for Specific Incident

In action to quash indictments for failure of police officials of City of Union City to suppress horse-race gambling, held that where there was no specific incident of such failure, but merely general accusations, such indictments would fail. *State* v. *Jenkins*, 54 Atl. (2d) 804 (N. J. Sup. Ct., Sept. 16, 1947).

Policemen—Notice of Termination of Employment—Subsequent Notice Agreeing to Remain

Where city policemen and firemen notified mayor of election to terminate employment, held that contracts of employment were terminated, notwithstanding subsequent notice that employes had reconsidered and would remain on jobs. *State ex rel. Palm* v. *City of Brazil*, 74 N. E. (2d) 917 (Ind., Oct. 14, 1947).

Policemen—Promotion—Leaves of Absence as Creating Vacancies

In action for declaratory judgment, held that granting of leaves of absence to captains in the Cleveland Police Department did not create vacancies and attempted promotions to take the place of such captains on leave were void. *Schoonmaker v. George, Kerr v. Same*, 74 N. E. (2d) 650 (Ohio App., Apr. 28, 1947).

Rent Control—Applicability of Local Regulations to Federal Gov't

In dispossessory proceeding by United States, held that District of Columbia Emergency Rent Act was not applicable to defense housing project erected by Navy Department in Washington so as to require United States to allege grounds of possession required by Act, since act does not specifically mention United States as landlord. *Wittek v. United States*, 54 Atl. (2d) 747 (D. C. Mun. App., Sept. 10, 1947).

Rent Control—Federal Act Attacked—Hardship on Landlord

In eviction action, held that Federal Housing and Rent Act of 1947 is not unconstitutional, even though landlord may be compelled to take loss in renting housing accommodations. *Stahl* v. *Finkelstein*, 73 N. Y. S. (2d) 679 (N. Y. Mun. Ct., Oct. 8, 1947).

Sidewalks—Defect Causing Injury—Lay Opinion Excluded

In action for damages for injuries caused by fall on defective sidewalk, held that opinion of lay witness as to dangerous condition of defect was properly excluded, and city held not liable. *Ming* v. *City of Jackson*, 31 So. (2d) 900 (Miss., Sept. 22, 1947).

Streets—Minimum Width Requirements

In action to restrain construction of street, held that city charter providing that all streets thereafter opened should be at least 30 feet in width did not apply to street acquired before adoption of such provision. *Hylton* v. *Town of Mount Airy*, 44 S. E. (2d) 51 (N. C., Sept. 17, 1947).

STATE HIGHWAY DEPARTMENTS!

CITY STREET DEPARTMENTS!

. . . and all TRAFFIC ENGINEERS!

Put PRISMO on guard for you to prevent scenes like this!

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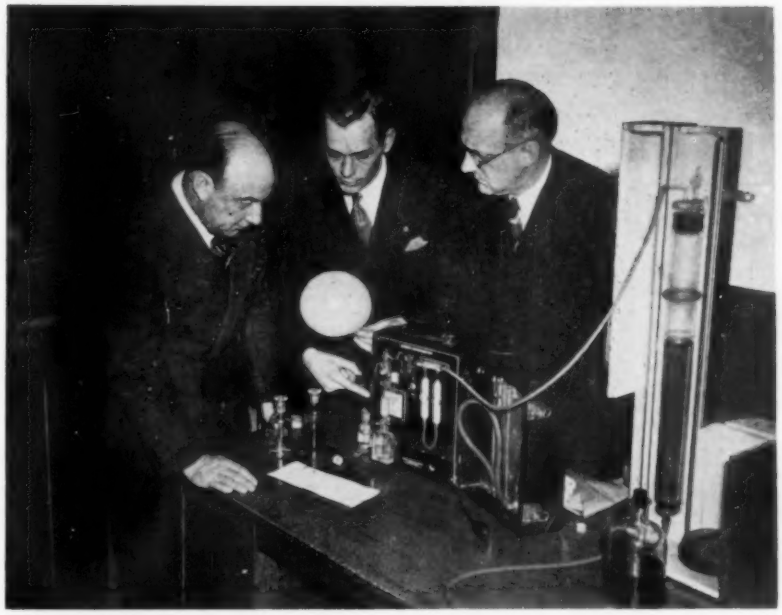
HUNTINGDON, PA.

Is He Drunk or Sober?

By LOUIS M. O'BRIEN, *Inspector*
Accident Prevention Bureau
Department of Police
Detroit, Mich.

SCIENCE has replaced guesswork in our handling of intoxicated drivers. Like most states, the State of Michigan with its Drunk Motor Law has made punishable "the operation of motor vehicle by person under the influence of intoxicating liquor or drugs." In Detroit, we don't depend upon the old rule-of-thumb methods to decide whether a driver is intoxicated. The traditional methods of determining drunkenness, based entirely upon the appearance and conduct of the accused, are not fair. Medical science has proved that, although a man outwardly may have all the aspects of drunkenness, he may be suffering from cerebral concussion, extremely high blood pressure, an overdose of insulin, or from one of 65 pathological reasons. Even the lack of insulin may cause the breath of a diabetic to simulate a noticeable intoxication odor. For these reasons, we adopted in 1945 the Drunkometer test, a simple test which shows the amount of alcohol in a person's blood stream, giving the suspect an even break.



Detroit's Drunkometer test equipment is being examined by, from left to right, Commissioner John F. Ballenger, Detroit Police Department; Sergeant F. M. Andrews of the police department in Evanston, Ill., and Dr. C. Muehlberger, toxicologist of the Michigan State Department of Health, Lansing, Mich. The test is completed within ten minutes.

Voluntary Test

When a driver is arrested for a traffic violation or has been involved in a traffic accident, and it is suspected that this person is under the influence of alcohol, he is immediately taken before the officer-in-charge of the nearest precinct station. Here his physical condition is observed. If there is any question of his sobriety, he is given the opportunity of taking the Drunkometer test, a voluntary test. If he agrees (quite often people refuse) to the test, it is effected by a trained and qualified officer. This ten-minute test, based upon the chemical analysis of the breath, indicates the concentration of alcohol circulating in the body. If the test indicates 0.15% or over of blood alcohol concentration, a formal charge is placed against the driver under the Drunk Motor Law. When the case comes up for trial in Traffic Court, the Drunkometer operator who gave the test is subpoenaed to give testimony regarding the physical condition of the accused and the results of the Drunkometer test.

Test Equipment Necessary

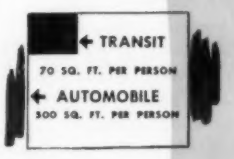
In May, 1945, nine police officers were given a six-month training course in the operation and chemistry of the Drunkometer. These men ran some 2,000 tests before being permitted to testify in court. All tests are conducted in a special testing laboratory, part of the Detroit Police Scientific Laboratory. The necessary test equipment and material are a Harger Drunkometer, manufactured by the Stephenson Corp., Red Bank, N. J.; a Seko Chain-O-Matic balance, chemicals, acids, and glassware.

The use of the Drunkometer assures a fair and honest prosecution and eliminates the chance of error in charging people under the Drunk Motor Law. We have had numerous cases in which the physical condition of suspects has indicated intoxication, but the Drunkometer test proved otherwise. From January through September 1947, the Drunkometer proved 614 drivers to be in the state of intoxication, whereas it exonerated 237 suspects. This is a high percentage of persons who might otherwise have been unjustly convicted. In several instances, we found suspects to be under the influence of narcotic drugs and prosecuted them as users of narcotics. Some suspects had recently been subjected to various types of medicinal shots, giving them all the aspects of drunkenness. It was the Drunkometer which saved these persons from being charged under the Drunk Motor Law. This phase of the use of such an instrument merits keener public understanding.

LOOK WHAT YOU GET WHEN YOUR TRANSIT COMPANY PROSPERS

BETTER SERVICE When the transit company in your city is making money, a big chunk of its profits goes into buying modern vehicles. Then your taxpayers benefit by getting to their destinations faster, in greater comfort.

MORE RIDING The improved service means that people can be persuaded to ride by public transit instead of automobile. And that's important . . .



LESS TRAFFIC CONGESTION Every time a person uses transit in preference to automobile, he frees 430 square feet of street space. That's why a high transit riding habit speeds all traffic and makes a big dent in traffic congestion.

STIMULATED INDUSTRY Fewer traffic jams encourage local industry to expand within taxable areas, reducing the dangers of decentralization. A good traffic flow also attracts new industry.

MORE JOBS With industrial expansion come greater opportunities for workers. As they prosper, so prosper your city's merchants and service industries.

STILL BETTER SERVICE As the improved service makes office, home, and store more accessible, more and more people can be persuaded to ride by transit. The result: a continuing cycle of better service, better traffic flow, stimulated industry, and more jobs.

Apparatus Dept., General Electric Company, Schenectady 5, N. Y.

TROLLEY COACHES MAKE MONEY FOR TRANSIT COMPANIES

GENERAL ELECTRIC

107-215

Do Wide Streets Slow Traffic Flow?

A street is too wide if its width is greater than 100 feet, is the opinion of W. B. Hurst, city engineer of Winnipeg, Canada. Tom Jacobi, city engineer, Indianapolis, Ind., says a street is too wide if its width is more than 80 feet. Both these opinions were expressed in the recent American Public Works Congress held in Jacksonville, Fla. With very wide streets, it is difficult to time traffic signals to suit both the vehicles and the pedestrians who scurry to cross in time. *The American City* invites your discussion on this interesting problem.

STREET width as a factor in traffic control is seen by comparing Portage and Graham Avenues in Winnipeg. The distances between intersections are almost identical, but pavement widths are 96 feet and 46 feet, respectively.

On Portage Avenue, which is a synchronized zone, an 80-second cycle is used at all intersections. The cycle is divided with 55 seconds for Portage Avenue traffic and 25 seconds for cross traffic. The 25-second cross time is the absolute minimum that can be allowed for pedestrian movement. Any increase in time would necessarily be taken from Portage Avenue and so reduce the traffic movement there. The 80-second cycle allows traffic to flow (when in step with the system) at 16 miles per hour.

On Graham Avenue, where signals have recently been installed, a 60-second cycle can be used because of the narrower thoroughfare. The cycle is divided with 39 seconds for Graham Avenue and 21 seconds for cross traffic. This allows traffic to flow at a speed of 22 miles per hour.

Since the speed of traffic varies inversely as the time of the cycle (assuming equal volume of traffic in opposite directions), it follows that the greater speed on Graham Avenue will accelerate the flow of traffic and at the same time allow the cross traffic a longer period to move as compared with that of Portage Avenue. On Portage Avenue, the pedestrians are allowed 25 seconds to cross the 96-foot-wide street, whereas on Graham Avenue, which is only 46 feet wide, the pedestrians have 21 seconds to cross. To cross Portage Avenue, a pedestrian must travel at the rate of 2.6 miles per hour, while on Graham Avenue, he may cross at 1.5 miles per hour.

The suggestion that center strips might be put in for the rescue of pedestrians halfway across the street is not applicable in this case, because the street-car tracks are close together in the center of the street. They would have to be spread apart to provide for the installation of the safety zones. This would have the effect of narrowing the usable portion of the street now dedicated to the flow of traffic.

W.D. HURST
City Engineer
Winnipeg, Canada

Pedestrians use street-car safety islands when crossing 80-foot-wide Washington Street in Indianapolis, Ind.

Pedestrians get only 25 seconds to cross this 90-foot street in Winnipeg, Canada.

IN Indianapolis, the only wide street which requires provision for pedestrian protection in crossing is 80-foot-wide Washington Street. As I stated at the American Public Works Aoosiation meeting in Jacksonville, this is not a current problem, because the street-car protective loading zones serve as safety islands for the pedestrians. As the street-cars are eli.minated we will provide by 1952 centrally located pedestrian islands in order to give the pedestrians ample chance to cross the street safely. This is similar to the Canal Street idea in New Orleans and Michigan Boulevard in Chicago.

In designing street widths, we are considering 10-foot traffic lanes and 8-foot parking lanes, so that a 4-lane traffic street with parking provisions on both sides would be 56 feet from curb to curb. Such a width does not call for a pedestrian island, because the actual traffic width is only 40 feet.

T. R. JACOBI
City Civil Engineer
Indianapolis, Ind.

Here's *the answer* to your off-street parking problem

PARK-N-LOT*

THIS NEW 10-HOUR MODEL OF PARK-O-METER WILL FINANCE MUNICIPAL PARKING LOTS AND SOLVE EVERY OFF-STREET PARKING PROBLEM

*

Automatic Park-N-Lot* Meters, embodying the same time-proved mechanism employed in the famous Park-O-Meters, provide a permanent solution to all off-street parking problems. They pay for themselves quickly; pay for the parking facilities; then continue to bring in revenue.

Fully variable to meet every coin and time combination that may be required.

TYPICAL OPERATING PLAN

FRINGE AREA	BUSY AREA
2 hours, 1 nickel	1 hour, 1 nickel
4 hours, 2 nickels	2 hours, 2 nickels
6 hours, 3 nickels	3 hours, 3 nickels
8 hours, 4 nickels	So on through 10 hours
10 hours, 5 nickels	5 hours, 1 quarter
10 hours, 1 quarter	10 hours, 2 quarters

* REGISTERED TRADE MARK U.S. PAT. OFF.

Deliveries Now Being Made
ASK FOR DETAILS AND DEMONSTRATION

Magee-Hale **PARK-O-METER COMPANY**

COMMERCE EXCHANGE BUILDING • OKLAHOMA CITY 2, OKLAHOMA

(Macnick Company, Manufacturers, Tulsa, Oklahoma)

Boston Studies Truck Terminals

THE movement of goods is to the city what the circulation of blood is to the body, a vital function which must be maintained at a high level of efficiency. The full possibilities of the motor truck cannot be secured without good highways and terminal facilities. The construction of modern truck terminals has been very much neglected. The solution to the problem, as obvious as the central post office, is a central point of consolidation and clearance for freight: a union motor-truck terminal.

Two benefits from a union terminal are traffic relief and lower costs. The first is a direct benefit to the community; the second accrues directly to the truckmen and shippers and indirectly to the public. The problem is to determine whether a terminal should be built and by whom, of what size, in what location, and how and by whom operated. The first step is to find out how great a reduction in truck traffic and how large a saving in trucking costs would be achieved by a terminal. The city planning board of Boston, Mass., has had the willing cooperation of *truckmen and transportation specialists, who alone can furnish this fundamental information.*

A conservative estimate of the volume of freight which might pass through a Boston union terminal is 2,800 tons daily, of which 2,400 tons would be picked up or delivered in the area served by the terminal, and 400 tons interchanged between carriers at the platform, to be forwarded to points beyond Boston. Assuming that the present load factor of 44% can be doubled, a terminal of the size just specified would make possible:

- A reduction of one-eighth in all truck traffic occasioned by pick-up and delivery of small consignments in downtown Boston.
- A reduction of 50% in the amount of truck traffic for each ton actually picked up or delivered.
- A saving of 27 cents on each ton of freight handled at the platform.
- A saving of 51 cents on each ton of freight picked up or delivered.
- A gross annual saving to truckmen, shippers, and eventually to the public of approximately $800,000.

Based upon a rational deduction and the proposals for terminals at New York and Louisville, it appears that a terminal, to handle 2,800 tons daily, should require the following:

- A site of at least 9 acres.
- An administration and storage building with a floor area of 90,000 square feet.
- Platforms totaling 1,250 feet with back-up spaces for 200 trucks and equipped with mechanical conveyor system.
- Access roadways and parking areas.
- A cost, including site, of at least $2,500,000.

The answers to all questions should relate to an average day and to freight consisting of consignments of 6,000 lbs. or less.

	Answer
1. How many of your own trucks are engaged in pickup and/or delivery work in downtown Boston, on an average day?	_____
2. How many trucks belonging to others call at your terminal on pickup and/or delivery work in downtown Boston, on an average day?	_____
3. How many stops for pickup and/or delivery do the trucks referred to in (1) make in downtown Boston on an average day? Give answer as an average per truck.	_____
4. How many tons of freight in consignments of 6,000 lbs. or less do the trucks referred to in (1) pick up and/or deliver in downtown Boston, on an average day?	_____
5. How many tons of freight in consignments of 6,000 lbs. or less do you forward to terminals or places of business of other carriers in the Boston area, for transshipment, on an average day?	_____

Remarks:

_____

_____

_____

_____

Company or Firm _____

Address _____

Person Reporting _____

Date _____

The City Planning Board's questionnaire for study of the motor truck terminal.

Seattle Transit Must Pay All Expenses

THE trolley coach and bus fare in Seattle was three tokens for 25 cents and free transfers until last August. A cumulative drop in patronage since the first of last year caused the Seattle Transit Commission to change the fare to 10 cents straight with free transfer, including one hour stop-over privilege. The change of fare was the subject of litigation against the Transit Commission, but its exclusive power to fix fares was sustained.

The local Commission, created by Chapter 47, Laws of Washington 1939, is obligated, by said law and the terms of the revenue bonds which the city has issued, to maintain a rate of fare sufficient to pay its annual bond obligations, create a replacement fund, and maintain a reserve for an additional principal payment on bonds. Increased operating expenses, the somewhat substantial loss in patronage, and these special financial commitments were given by the Commission as the reason for the increase.

The system, which is municipally owned, is all on rubber, and was completely rehabilitated in 1939 with the aid of an RFC loan, which was paid off long ago by the issue of refunding bonds. It is modern and efficient, and there is little or no prospect that the fare will be more than 10 cents, which so far has been ample to take care of all obligations.

A. C. VAN SOELEN
Corporation Counsel
Seattle, Wash.

LIFE PRESERVERS...

on duty the year 'round

WHEN improved street lighting goes up, night accident rates go down. That's been proved time after time. Better street lighting also safeguards property . . . gives extra protection against crime.

Ever since the beginnings of modern street lighting in this country, Union Metal engineers have sought and *found* ways to extend its advantages to more and more people. Through refinements in production... *and* standardization... they have made it possible for steel lighting standards to be used in localities where even the most modest budgets prevail.

Today, tens of thousands of these *better* lighting standards, in hundreds of cities and towns, stand as "life preservers"—on duty the year round.

Include Union Metal tapered steel standards in your street lighting improvement plans, and gain extra benefits in durability, economy, and attractive appearance. The Union Metal Manufacturing Company, Canton 5, Ohio.

We regret the present extended delivery schedules due to the steel shortage, but this will improve and you will find Union Metal lighting standards well worth waiting for.

UNION METAL

Largest Producers of Street Lighting Standards

Correlation of Street Trees And Street Lighting

By KIRK M. REID
General Electric Co.
Cleveland, Ohio
and
EDWARD H. SCANLON
Commissioner of Shade Trees
Cleveland, Ohio
Editor of Trees Magazine

STREET trees and street lighting, each indispensable, are often in conflict. Too often, the management of street trees has been unsound in two respects: poor selection and crowded plantings. Trees should be selected to fit the street space available, hence requiring little pruning. The remedy for poor selection is the education of property owners and a firm policy by the city arborists to do the job correctly. The street must be the unit, not the individual property. Only enough trees must be planted to obtain the highest degree of beauty of individual trees and the street as a whole.

In order to meet space requirements, upright and globe varieties as well as "normal" species are needed. Upright varieties should be used exclusively on narrow streets and on wide streets at corners and near street lamps. Where there are telephone or electric service lines along the street, the globe or upright varieties may permit running the wires above or to the side of the trees. Two species excellent for streets are available in three forms: normal, upright, and globe. These are the Norway maple and the European elm. Where soil and climate permit, municipalities should use these six trees. Five other species, available with upright varieties and excellent for streets, are the sugar maple, the American elm, the English oak, the American red oak, and the London plane or the sycamore. These species may be supplemented by three others in which upright varieties are available: ginkgo and red maple for northern climate, and magnolia for southern.

The assurance of the availability of the desired varieties, properly trained for street use, requires arrangements several years in advance of need. Such arrangements may be made with state or national nursery associations, or sometimes stock may be grown in the municipal nursery.

When a tree conflicts seriously with a utility service, the best remedy in most cases is proper pruning. Drastic pruning results in twig and limb dieback or other injuries which encourage insects and fungus diseases and cause the ultimate loss of the tree. Where trees are crowded, there are two remedies. One is the relocation of the poles, wires, or street lamps involved. This seldom can be done without the impairment of utility services. The alternative measure is the mutilation or, preferably, the removal of the conflicting trees. If the conflicting tree is removed entirely, the gap can be filled with that type of tree which conforms to the ultimate plan.

Two types of street-lighting luminaires are encountered in the study of foliage interference with street illumination. One is the upright type, located a foot or two back of the curb, usually at mounting heights of 10 to 15 feet on local-traffic residential streets, and 15

This night view of Cleveland's East 117th Street shows how effective street lighting can be with proper pruning.

Reduce Stacking and Overshooting.

Land Ships Faster, More Safely w

BARTOW

High Intensity Approa and Runway Lightin

Bartow, high intensity approach and runway lighting, as seen by a pilot going onto visual contact.

THE BARTOW RUNWAY LIGHT *(closed)*

On a Bartow-equipped runway, landings can be made safely and regularly under low visibility conditions, without reducing present proved safety standards. Therefore stacking and overshooting are greatly reduced.

Bartow high intensity approach and runway lights provide powerful, scientifically controlled beams that give maximum penetration of all atmospheric conditions to guide pilots to a safe landing. Properly controlled direction of light—free of glare—giv pilot the visual perspective he must after leaving instruments to make landing under low-visibility conditions

Bartow runway lights were used dur war by the armed forces in the Al and other particularly bad weather Now available for civilian use, they are installed at, or ordered for, many airp the United States and foreign countri

Complete description of Bartow lights and how they work are given in the book, "The Lights That Bring Them In;" for example . . .

The diagram shows that the light from the Bartow unit reaches the pilot at converging angles. The lens system is so designed that at these angles the light from each unit will appear of equal value to the pilot. Glare is eliminated, and the pilot is given perspective to judge location, speed, altitude, attitude, and direction.

Ask us to send you a copy of this new bo

Now available is a new booklet on low visibility landi cussing restricted visibility problems . . . perspective portance to elements of landing . . . also glare and ligh tration.

If you are concerned with airport or airline operation, interested in approach and runway lighting, ask us to se a copy of the booklet, "The Lights That Bring The Write Line Material Company, Airport Lighting D East Stroudsburg, Pa.

LM

LINE MATERIAL
AIRPORT LIGHTING

L-M DISTRIBUTION EQUIPMENT INCLUDES: Distribution Transformers • Fuse Cutouts and Fuse Links • Lightning Arresters • Oil Switches • Pole Line Hardware • Line Construction Specialties • Underground Equipment • Fibre Conduit • Street and Airport Lighting Equipment • Wind Radio Control Equipment • Capacitors

to 20 feet on arterial streets. The other is the pendant luminaire, suspended on a bracket 5 to 10 feet beyond the curb out over the pavement. The mounting heights of these luminaires are 20 to 25 feet on local-traffic residential streets and 25 to 30 feet on arterial streets.

Modern pendant-type luminaires are superior to the upright type in the amount of visibility provided per dollar of total lighting cost. Under typical street conditions, the over-all lighting effectiveness of a modern pendant system is approximately three times that of an upright system of equal total cost. The pendant-type luminaires usually encounter less foliage interference, because their bracket mounting removes them 15 to 20 feet from the line of the tree trunks. Also, their position out over the pavement throws tree-trunk shadows diagonally across the sidewalk; in contrast, trunks shadow the sidewalk much more heavily with upright luminaires near the line of the trunks.

From a paper given at the 1947 National Technical Conference, Illuminating Engineering Soc.

These upright sugar maples in Rochester, N. Y., do not interfere with the street lighting luminaires. This is an example of proper planning

Helps in Planning New Street Lighting

MOST people who wear glasses don't change lenses at regular periods, but only when the need for better vision becomes inescapable. Street lighting is a great deal like that. Almost all cities have had street lights and still do. Most of them have had the same type and degree of illumination for 20 years or more. They are accustomed to this lighting and have no lighting yardstick to measure its inadequacy. There are, however, several factors which tell the tale. These are the crimes on the streets, delinquencies, traffic accidents, and traffic fatalities.

There may be in your police department spot maps showing the actual locations of night-traffic accidents for each year. In any event, they can be prepared from the records. Comparisons of 1938-40 figures with those of 1946-47 will doubtless reveal the streets where traffic volume and speeds have outgrown the visibility provided there.

Similar maps and statistics of hold-ups, muggings, and annoyances, will show by location where horse-and-buggy residential-street lighting has encouraged boldness and brutality in a hit-and-run generation.

Knowledge of these facts—the traffic and crime statistics and the streets on which they have increased—constitutes the strongest basis for recommending modern street lighting.

Having determined the hazardous streets and regions in a city, the next step is to measure the present level that should be provided, and to design and install proper street-lighting systems on one or more traffic arteries and in the residential section with the worst crime record. These experimental systems should be well publicized in the local newspapers, because they can be good salesmen for a new lighting system. Statistics on these streets should be kept for comparison with past accidents and crimes.

Practical advice about street-lighting plans can be obtained from the manufacturers of street-lighting equipment. Literature on all phases of street lighting will be sent upon request by the Street and Traffic Safety Lighting Bureau. New York 17.

Better Street Lighting For Akron?

THE Akron Chamber of Commerce has started action to obtain improved traffic safety through better street illumination.

A committee of five has been appointed by the Summit County Safety Council to investigate street-lighting adequacy. The council is a division of the Chamber.

Meanwhile, the second annual industrial safety contest concluded its tenth month with 59 firms remaining accident-free. Accident frequency per million hours worked stood at 13.57 in October, as compared with 17.24 for October of last year.

Relamping Enclosed Luminaires from the Ground

A NEW Joslyn luminaire is available with a gasketless latching arrangement which permits relamping from the ground. In luminaires where the reflector and glassware are hinged, the two parts are usually fitted with a gasket in order to keep out dust and insects. In such luminaires, there is said to be a tendency for the gasket to stick to one section or the other and become loose when the two sections are opened or parted for relamping.

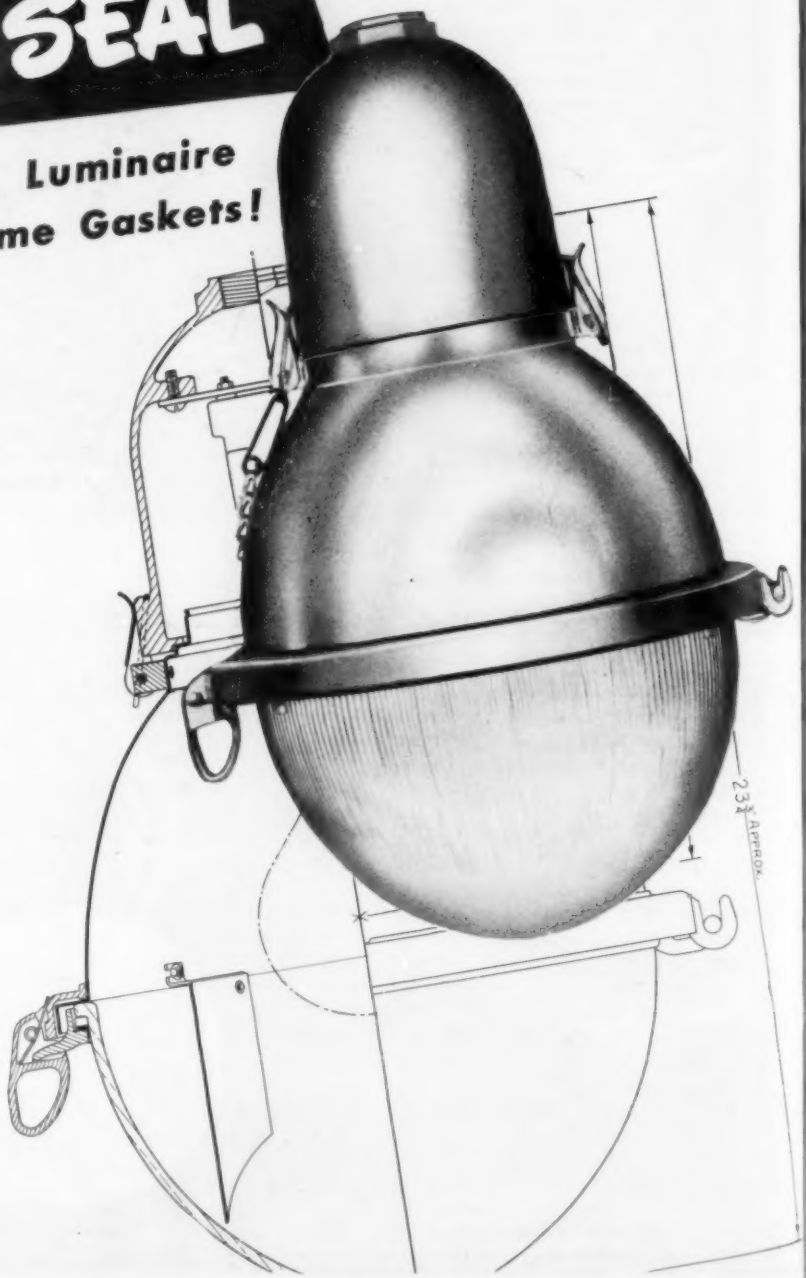
When the relamping is performed from a tower truck, a loose gasket can be put back in place and the luminaire closed snugly.

This is not possible where the relamping is done from the ground by the use of a hook stick and a lamp replacer. Elimination of gaskets in the Joslyn luminaire is obtained by careful seating of the reflector and the glassware, together with an automatic latch and a spring that applies uniform pressure at all points. For further information, write the Joslyn Mfg. and Supply Co., Chicago 6, Ill.

Announcing the New JOSLYN

DIRECT SEAL

Automatic Latching Luminaire Eliminates Troublesome Gaskets!



This new unique Joslyn Development provides a *direct-seal* between glassware and reflector without the use of gaskets which have proved to be troublesome and inadequate for street lighting applications. It results from our constant effort to provide Street Lighting Equipment of the highest efficiency and durability.

The following are some of the outstanding points of merit:

1. Circular wave type spring assures uniform high pressure direct-seal of glassware to reflector.
2. Latch and hinge attached to die cast aluminum ring which surrounds bottom flange of reflector thereby preventing distortion of reflector due to latching pressure.
3. The glassware holding ring of die cast aluminum and circular wave type spring are easily and quickly attached to the Holophane refractor or globe by applying pressure and rotating to the locking position.
4. The high pressure automatic latches draws the glassware ring upward, compresses the circular wave type spring and thus provides a tight direct-seal of uniform pressure between glassware and reflector.
5. This design permits easy relamping from the ground with a switch stick and lamp replacer.
6. This luminaire conforms to latest requirements as to interchangability with respect to reflector-glassware assembly, sockets and series receptacles.

Branch offices in principal cities

•

THE JOSLYN CO.
THE SOUTH EAST JOSLYN CO.
SOUTHERN JOSLYN CO.
JOSLYN SOUTHWEST CO.
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JOSLYN

Complete Pole Line Equipment

20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

G. AND
PPLY CO

Adjusting Floodlights on Sports Fields

Precise aiming of floodlights is important for sports field floodlighting. Each of the hundreds of lights must be directed at a slightly different spot to illuminate the play properly and keep the glare from the spectators' eyes. The boxes in which the lights were shipped from Westinghouse are arranged on the Giants' Polo Grounds to act as targets. A rifle sight, built into each floodlight, makes it possible to aim the lights in daytime.

Sodium Lighting on Main Artery Bridge

I WAS especially interested in the article, "Sodium Lights on Charter Oak Bridge," which appeared in the November issue of THE AMERICAN CITY, because we have found the sodium lights on New Haven's Ferry Street Bridge to be extremely efficient and successful.

The design for the new bridge was completed in 1938. Our next important decision was to choose a lighting system which would prevent accidents caused by fog and poor visibility. In 1939, when the General Electric Company was prepared to manufacture mercury vapor lamps, we made a study in conjunction with the General Electric Company and New Haven's United Illuminating Company to determine the best lighting for the new bridge. Mercury vapor lamps were considered, but slight fluctuations in current voltage would permit the lamps to go out for a period of 9½ minutes. After much experimentation, it was decided that sodium vapor lamps were the most efficient for our locality and for our particular requirements. When the bridge was completed in 1940, sodium vapor lights were installed. Our experience during the past seven years has proved that we made an excellent choice.

W. VINCENT BARRY,
City Engineer,
New Haven, Conn.

Seattle to Vote on New Lighting

THERE are now in the making three Seattle bond issues totaling $12 million, which will impose a 4% increase in taxes beginning in 1949. One of these is a $5.5-million bond issue for the new Public Safety Building, authorized by the voters in 1946. On the March 9 ballot will be a $4 million bond issue for installing new street lights on 334 miles of Seattle's streets. If approved, this bond issue will cost the city $252,480 annually in principal and interest for 20 years. The City Council has also decided to place a $2.5-million park-improvement bond issue on the March 9 ballot. This would cost the taxpayers $157,800 annually in principal and interest for 20 years.

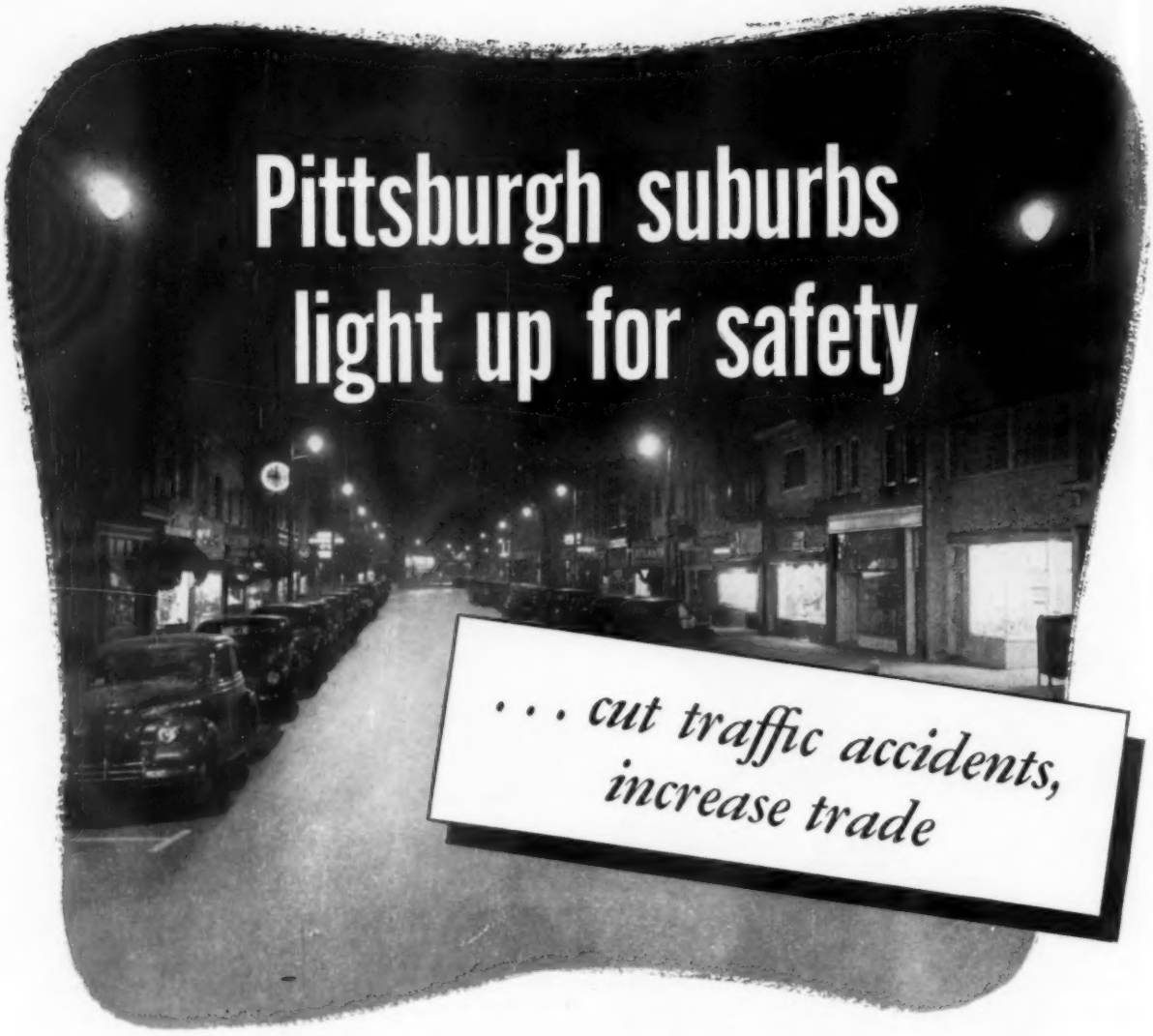
New Type of Globe

The street-lighting bond issue involves the installation of the new mercury-vapor type of globe on present power poles, 30 feet above street intersections. They will be placed on streets selected on the basis of heavy traffic flow, density of traffic fatalities, and crime incidents, as computed by City Traffic Engineer J. W. A. Bollong. These are the same type as the lights installed on Seattle's Fourth Street Avenue in 1946.

Public Safety Importance

Seattle's Dearborn Street is cited by Mr. Bollong as an example of the effectiveness of the new lighting in saving lives. During five years' experience with the new sodium-vapor lights on a section of this street, there have been only two traffic fatalities as compared with nine fatalities during the previous year and a half when the old lights were in operation. At that rate there would have been 30 deaths instead of 2.

An approach to New Haven's sodium-lighted Ferry Street Bridge.



PEOPLE who live in the home communities that ring Pittsburgh have found a new kind of freedom—made possible through the relighting of their city streets.

In Clairton, Aliquippa, Wilmerding, Avalon and other nearby towns traffic accidents have been reduced, night window shopping has picked up, and everywhere residents are commenting on how much more secure they feel after dark.

Typical of the quality of this new lighting is Franklin Avenue, Aliquippa, shown above. On this 42-foot wide street, classified by I.E.S. standards as a heavy traffic artery, 6000-lumen lights have been replaced with 10,000-lumens, mounting heights increased from 15 to 25 feet.

Typical of the reduction in traffic accidents is Miller Avenue, Clairton, where police officials reported a 25 percent improvement after the new lighting was installed.

Duquesne Light Company, the farsighted utility whose cooperation with municipal officials has made these improvements possible, is actively engaged in extending the benefits of good street lighting to additional areas—hopes soon to help make the entire Pittsburgh area a model of after dark safety.

THE WHOLE STORY

If you would like additional details, before and after photos, and ideas you can use to promote better street lighting in your community, write for your copy of "Improved Street Lighting Around Pittsburgh."

The Street and Traffic Safety Lighting Bureau, NEMA, 155 East 44th St., New York 17, N. Y.

Recent City Manager Appointments

WOODBURY E. BRACKETT, manager of Washburn, Maine, 1931-34; Oakland, Maine, 1935-38; Middlebury, Vt., 1938-39; Houlton, Maine, 1939-47; Montpelier, Vt., since August 1947, has been appointed first manager at Dover, N. H.

WILLIAM P. BRISCOE is city manager of Harlingen, Texas.

KNOWLAND L. BRODE, manager of Newton, Kans., 1931-39, is now city manager of Lebanon, Mo.

HENRY L. DENHAM has been appointed at Pittsburg, Calif.

D. D. DESILETS has been appointed first manager of Rouyn, Quebec.

HORACE P. EDMOND, city manager of Delray Beach, Fla., since February 1946, has been appointed at Pompano Beach.

T. E. FENNESSEY, manager of Las Vegas, Nev., from 1945 to September 1947, has been appointed at Tulare, Calif., succeeding Gail Bash.

E. G. Gustafson, former manager from 1933-39, has been appointed acting manager of Fort Pierce, Fla., following resignation of CLYDE E. SWANK.

WILLIAM J. HEARD, manager of Carey, Ohio, since June 1946, will become first manager of Kinston, N. C.

ROBERT D. HEITSCH, manager of Davidson, Mich., 1939-41, and Wayne, Mich., during 1947, has become first manager of Farmington, Conn.

L. L. HOUSTON has replaced RAY E. BIVINS as manager of Pawhuska, Okla.

JESSE HUGHEY is city manager of Madison, Fla.

GEORGE S. LYON has been appointed at Covington, Ky.

CHARLES C. MCCALL, manager of West View, Fla., 1942-43; Las Vegas, N. Mex., 1944-45 and Salinas, Calif., 1945-46, was appointed city manager of Glendale, Calif.

T. R. MCCASLING is city manager of Pauls Valley, Okla.

PHIL MINNER, Mayor of Council Bluffs, Iowa, has been appointed manager of Liberal, Kans.

CARLTON M. ROBERTS, public works director of Asbury Park, N. J., has been appointed at Fort Lauderdale, Fla.

CARLETON F. SHARPE, manager of St. Petersburg, Fla., from 1934-35, and again from 1944 to the present, has been appointed first manager of Hartford, Conn.

HARRY N. SHOWERS is acting borough manager at Milton, Pa.

RALPH SPALDING, a retired Navy captain, has succeeded O. J. S. ELLINGSON as manager of Key West, Fla.

CLYDE SWANK, manager of Panama City, Fla., 1940-45, and Fort Pierce, Fla., 1946-47, is the first manager of Charleston, Mo.

JAMES G. WALLACE, manager of Bangor, Maine, 1932-41; Wilmington, N. C., 1941-42; Kenosha, Wis., 1942-46, and Fargo, N. D., January-July 1947, has been appointed at Hopewell, Va.

CLARENCE E. RIDLEY
Executive Director
International City Managers Association
Chicago, Ill.

Kent Commission Prohibits Planting of Certain Trees

KENT, Ohio, a university town of 10,000 population, has recently taken steps to prohibit the planting of certain trees along its streets. Most communities recommend what should or should not be planted, but few actually exercise absolute authority.

Kent's Tree Commission forbids the planting of evergreen and fruit and nut trees (except oaks), as well as such popular shade trees as the silver maple, boxelder, ailanthus, poplar, willow, catalpa, and such ornamental trees as dogwood, white fringetree and redbud, which do not attain the size of mature shade trees. The commission does recommend planting of Norway, Schwedler and red maples, gingkos, honey locusts, sweetgums, tulip trees, oriental planes, scarlet, red, pin, and willow oaks, and American and European lindens.

Reasons for the restrictions are that some of the trees on the "forbidden" list have root systems likely to plug sewers or other underground construction. Others drop obnoxious fruits and nuts that clutter up sidewalks and parking strips. Evergreens lose their beauty when pruned to conform with street needs. Silver maples and catalpa trees are easily damaged during storms because of their exceedingly brittle wood. Trees that have attractive flowers or fruits are likely to be ruined by children.

Kent's Tree Commission benefits from the advice and experience of its secretary, M. W. Staples, field supervisor of The Davey Tree Expert Co., largest U. S. tree-care organization.

State Redevelopment Agency Organizes in California

LEDEMING TILTON, planning consultant of San Francisco, has been elected chairman of the State Redevelopment Agency, authorized at a recent session of the California legislature. Paul R. Williams, Los Angeles architect, is vice chairman, and Howard W. Campen, deputy district attorney of Santa Clara County, is secretary. Other members of the Agency are Festus T. McDonough, Plasterers' Union executive, of Los Angeles, and Howard Nichols, building contractor, of Bakersfield.

The Agency is charged with the responsibility of stimulating planning and community redevelopment, and of inquiring into and making recommendations designed to alleviate the California housing shortage. Applications will be considered for the position of Director of Redevelopment from persons who show a satisfactory record in public administration, planning, redevelopment, housing, and public relations.

Framingham Picked as New Shopping Center Site

FRAMINGHAM, Mass., has been chosen as the location for a new $7,000,000 shopping center by the same interests (Conant Real Estate Trust and Middlesex Trust) that are building the North Shore Center in Beverly, Mass., described in the July 1947 issue of THE AMERICAN CITY.

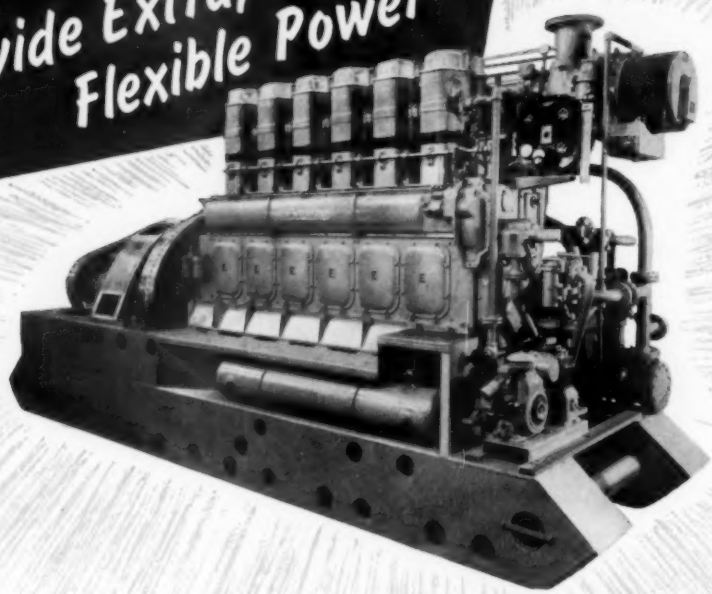
To be known as the Middlesex Center, the new project will require 27% more floor space than contained in the North Shore Center. There will be very few more stores, but they will be larger, while parking spaces will be increased to 4,000 and another theatre will be added.

The site is a 200-acre tract located on Route 30, which has been selected as a main express highway from Boston to Worcester and western Massachusetts. The center, which is also served by Routes 9, 27, and 126, is planned to meet the shopping needs of a population of 495,000 in 54 cities and towns just west of Boston.

About 40 acres in the middle of the tract will be used for the shopping center itself, while the 160-acre surrounding belt will be developed for better-type housing with park and play spaces. Most of the tenants in the two shopping centers, including both Boston and New York stores, will be the same.

PORTABLE ENTERPRISE GENERATING PLANTS

Provide Extra, Flexible Power



...when you need it most
...where you need it most

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Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Feb. 15-19—Chicago, Ill.
Associated Equipment Distributors. Annual Meeting (Edgewater Beach Hotel). Exec. Sec., Frank C. Knight, 360 N. Michigan Ave., Chicago, Ill.

Feb. 16-18—New York, N. Y.
United States Conference of Mayors. Annual Conference (Waldorf-Astoria Hotel). Exec. Dir., Paul V. Betters, 730 Jackson Place, Washington 6, D. C.

Feb. 24-26—Grand Rapids, Mich.
Michigan Highway Conference. Annual Meeting (Pantlind Hotel). Chairman, R. L. Morrison, University of Michigan, Ann Arbor, Mich.

March 3-5—Atlantic City, N. J.
Association of Highway Officials of the North Atlantic States. Annual Meeting (Traymore Hotel). Sec.-Treas., A. Lee Grover, Secretary State Highway Dept., Trenton, N. J.

March 10-12—Trenton, N. J.
New Jersey Sewage Works Association. Annual Meeting (Stacy-Trent Hotel). Sec.-Treas., M. S. Kachorsky, Box 283, Manville, N. J.

***March 11-12—Wichita, Kans.**
Kansas Sewage Works Association and Kansas Water Works Association. Annual Convention (Broadview Hotel). Sec. KSWA, Ben L. Williamson; Sec. KWWA, Major Hagar, Marvin Hall, University of Kansas, Lawrence, Kans.

March 11-13—New Orleans, La.
American Concrete Pipe Association. Annual Meeting (The Roosevelt). Mgr. Dir., Howard F. Peckworth, 228 N. LaSalle St., Chicago, Ill.

March 12-14—Washington, D. C.
American Society for Public Administration. Annual Conference (Statler Hotel). Sec.-Treas., Hazel Jackson, 1313 East 60th St., Chicago 37, Ill.

March 16-18—Grand Rapids, Mich.
Conference on Highway Engineering. Annual Conference (Pantlind Hotel). Sec., R. L. Morrison, University of Michigan, Ann Arbor, Mich.

April 1-2—Syracuse, N. Y.
American Water Works Association—New York Section. Spring Meeting (Hotel Syracuse). Sec.-Treas., R. K. Blanchard, 50 W. 50th St., New York, N. Y.

April 7-9—Chicago, Ill.
Midwest Power Conference. Annual Meeting (Sheraton Hotel). Sec., E. R. Whitehead, Illinois Institute of Technology, 3300 Federal St., Chicago 16, Ill.

April 8—Livingston, Mont.
Montana Sewage Works Association. Annual Meeting (City Auditorium). Exec. Sec., H. B. Foote, Division of Sanitary Engineering, Helena, Mont.

April 12-14—Fayetteville, Ark.
Arkansas Water and Sewage Conference. Annual Conference (University of Arkansas). Sec., Harrison Hale, 118 Chemistry Building, Fayetteville, Ark.

***April 12-14—Niagara Falls, Ont.**
American Water Works Association—Canadian Section. Annual Meeting (General Brock Hotel). Sec.-Treas., A. E. Berry, Parliament Buildings, Toronto, Canada.

April 14-17—Atlantic City, N. J.
Community Chests and Councils, Inc. Annual Meeting (Ambassador Hotel). Exec. Dir., Ralph Blanchard, 155 E. 44th St., New York 17, N. Y.

April 21-23—Lafayette, Ind.
American Water Works Association—Indiana Section. Annual Meeting (Purdue University, Union Building). Sec.-Treas., Charles H. Bechert, Room 200, Underwriters' Building, Indianapolis, Ind.

April 28-30—St. Louis, Mo.
Missouri Association of Public Utilities. Annual Meeting (Hotel Jefferson). General Counsel, William H. Allen, Merchants Bank Bldg., 101 West High St., Jefferson City, Mo.

May 3-5—Pittsburgh, Pa.
American Society of Landscape Architects. Annual Meeting (Hotel Roosevelt). Sec., Bradford Williams, 9 Park St., Boston 8, Mass.

May 3-7—Atlantic City, N. J.
American Water Works Association. Annual Meeting (Convention Hall). Sec., Harry E. Jordan, 500 Fifth Ave., New York, N.Y.

***May 6-7—Washington, D. C.**
National Highway Users' Conference (Mayflower Hotel). Director, A. C. Butler, National Press Building, Washington, D. C.

May 10-13—Washington, D. C.
National Fire Protection Association. Annual Meeting (Statler Hotel). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston, Mass.

May 12—Marlborough, Mass.
New England Sewage Works Association. Spring Meeting (Marlborough Country Club). Sec.-Treas., Walter E. Merrill, 511a State House, Boston, Mass.

May 17-19—Colorado Springs, Colo.
American Public Power Association. Annual Convention (Broadmoor). Gen. Mgr., Carlton L. Nau, 1129 Vermont Ave., NW., Washington 5, D. C.

May 17-19—Newark, N. J.
American Planning and Civic Association. Annual Meeting (Essex House). Exec. Sec., Harlean James, 901 Union Trust Bldg., Washington 5, D. C.

May 20-21—Spokane, Wash.
Association of Washington Cities. Annual Meeting (Davenport). Exec. Sec., Chester Biesen, Smith Hall, University of Washington, Seattle 5, Wash.

***May 27-28—Boston, Mass.**
American Shore and Beach Preservation Association (Copley Plaza). Sec.-Treas., Peter J. Cannon, 1060 Broad St., Newark 2, N. J.

June 7-10—Denver, Colo.
Municipal Finance Officers Association of the United States and Canada. Annual Meeting (Cosmopolitan Hotel). Exec. Dir., Miner B. Phillipps, 1313 East 60th St., Chicago 37, Ill.

June 10-12—Denver, Colo.
Colorado Municipal League. Annual Meeting (Shirley-Savoy Hotel). Exec. Sec., Allen E. Pritchard, Jr., 327 Norlin Library, Boulder Colo.

***June 13-16—Uniontown, Pa.**
Pennsylvania State Association of Township Commissioners. Annual Conference (Hotel Summit). Sec.-Treas., H. A. Fritschman, Upper Darby, Pa.

June 18-19—Milwaukee, Wis.
Central States Sewage Works Association. Annual Meeting (Schroeder Hotel). Sec.-Treas., Paul W. Reed, 1098 W. Michigan St., Indianapolis, Ind.

June 20-26—Zurich, Switzerland
International Congress for Housing and Town Planning (Das Kongresshaus). Acting Sec. Gen., Morris H. Hirsh, International Federation for Housing and Town Planning, 13 Suffolk St., Haymarket, London, S.W. 1, England.

July 16-24—Chicago, Ill.
American Road Builders Association. Road Show. Soldier Field. Engr. Dir., Charles M. Upham, 1319 F St., NW., Washington 4, D. C.

Sept. 14-15—Manitoba, Canada
American Water Works Association—Minnesota Section. Annual Conference (Royal Alexandra Hotel). Sec.-Treas., R. M. Finch, 416 Flour Exchange, Minneapolis 15, Minn.

Oct. 10-14—New York, N. Y.
International Association of Chiefs of Police. Annual Conference (Hotel Pennsylvania). Exec. Sec., Edward J. Kelly, 918 F St., NW., Washington, D. C.

Oct. 11-13—New York, N. Y.
American Society of Planning Officials. Annual Meeting (Hotel New Yorker). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

Bond Market Trends

THE municipal bond market seems to have stabilized since the first of the year after a change in interest rate during 1947 of 0.50%. *The Bond Buyer's* index of 20 representative long-term municipal bonds stood at 1.85% at the beginning of 1947, but after several fluctuations during the year it dropped sharply during October, November, and December until it reached the figure of 2.35% for the close of 1947. This yield remained steady during January, and was reported in *The Bond Buyer's* index for January 22nd.

The Bond Buyer reports that 1947 was a record-breaking year for the issuance of state and municipal bonds, a total of $2,351,181,262 having been issued, more than twice the 1946 record figure of $1,203,567,909. A sizable proportion of the 1947 total was accounted for by a small number of unusually large issues, such as the $230,000,000 soldier bonus bonds for the State of Michigan and $300,000,000 for the State of Illinois.

A table recently published by *The Bond Buyer*, showing state and municipal bond election results since 1926, reveals what may be a changing attitude of taxpayers toward the creation of new indebtedness. The table shows that, in 1947, of the bond amounts submitted to the voters 92% were approved, and only 8% were defeated. The figures were $1,870,028,900 and $165,013,750 respectively. The percentage of bond issue amounts rejected by the voters in 1947 was lower than in any previous year. In both 1945 and 1946 the percentage of bond amounts disapproved was 13%, but in prior years it had ranged as high as 61% [recorded in 1939].

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15P-3N	— 180 Min for 15 Pennies or 3 Nickels.....	1,652
10P-2N	— 120 Min. for 10 Pennies or 2 Nickels.....	**54,409**
5P-1N	— 60 Min. for 5 Pennies or 1 Nickel.....	12,515
1P Only	— 12 Min. for 1 Penny.....	344
5P-1N	— 120 Min. for 5 Pennies or 1 Nickel.....	447
5P-1N	— 30 Min. for 5 Pennies or 1 Nickel.....	235

(10 Miscellaneous combinations made up balance of 72,912)

Over 40 different rate combinations available in the MILLER cumulative parking meter. A truly "traffic engineered" meter to handle any city's requirement—now or later. Write for details.

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Municipal and Civic Publications

Data Book for Engineers

FIELD PRACTICE—*By Elwyn E. Seelye, Seelye, Stevenson and Value, New York. John Wiley, New York.* 305 *pp.* 1947. $1.50.

This is the third of a set of books by this author, a practicing consulting engineer, who aimed his texts at the type of material engineers specifically need in their everyday practice. The first of these was entitled "Design," the second, "Specifications and Costs." This volume goes into those activities that must take place in the field. Mr. Seelye divides his text into two sections, the first of which is inspection and the second, surveying. In the first he lists such important considerations as concrete, masonry, structural steel, welding, bridges, painting, foundations on soil, pile driving, timber, strengths of ropes and cables, soils, aggregates, bituminous paving, pipe laying. In the surveying section, he covers topographic surveys, construction stakeouts, circular curves, transition curves, vertical curves, railroad turnouts, earthwork commutations, leveling, transit problems, and similar material.

Sewage Grit Chambers—German Type

CIRCULAR GRIT CHAMBERS (GERMANY)—*By G. M. Ornsen, Technical Industrial Intelligence Division, U. S. Department of Commerce.* 21 *pp.* 1947. *Fiat final report* 1124.

The report by Dr. Ornsen discusses the Blunk and the Geiger grit chambers. Although the sanitary-engineering profession is familiar with both these tanks from general description, the report's more detailed analysis gives helpful information.

The Blunk grit chamber is essentially a deep hopper-bottomed tank that receives the sewage through a central tube extending well below the surface. The tank operates on the upflow principle. It has a set of concentric shells arranged to give approximately the same area in each annular space between the shells. The upper edges of the shells are arranged at differing elevations to equalize the rate of flow through the tank. The grit is discharged through an air lift that also helps to loosen any clinging matter.

The Geiger grit chamber is roughly the same shape; however, it receives the sewage from a tangential inlet, allowing the sewage to make a circular course around the central discharge column. The grit drops at the inner portion of the chamber where the flow velocity is lowest.

Water-Well Data

WATER WELL HANDBOOK—*By Keith E. Anderson, Geologist and Engineer for the State of Missouri, Division of Geological Survey and Water Resources.* 200 *pp.* 1947. *Published by Missouri Water Well Drillers Assn., Box* 250 *Rolla, Mo. Photo-offset.* $1.50.

A compilation of charts, tables, and other data conveniently brought together for reference by engineers, water-well drillers, and others involved in the development of groundwater supplies. Written text plays a subordinate role to the tabular data. Chapter headings cover mathematical formulae, water data, cable tool drilling, rotary drilling, pipe and casing, pumps, electrical data, flow measurement, the quality of water, geology and the hydraulics of wells, and other miscellaneous information.

Public Health Books

GOOD BOOKS ON PUBLIC HEALTH—*Municipal Reference Library Notes, December* 1947. *Room* 2230, *Municipal Building, New York* 7, *N. Y.* 8 *pp.* 20 *cents per copy.*

A listing of books on public health received by the Municipal Reference Library of New York during 1947. Sections include: Medicine, Surgery and Dentistry; Public Health, Child Care; Food and Drugs; Laboratory Field; Hospitals, and Nursing.

The Municipal Index

THE MUNICIPAL INDEX 1948—*22nd annual edition for governmental purchasers. Published by American City Magazine Corporation,* 470 *Fourth Ave., New York* 16, *N. Y.* 10 *sections.* 788 *pp.* $5.00.

The aim of this 22nd annual edition of THE MUNICIPAL INDEX is to serve as a complete guide to the purchase of equipment and materials for street, water, sewerage, electric, and street-lighting systems; fire and police departments; parks, playgrounds and swimming pools, and municipal offices. "Who's Who in Municipal Supply" lists the manufacturers and their lines, covering most of the products required for all the services named.

To make these lists of the greatest value to city purchasers, virtually all manufacturers in every field mentioned were invited to send in for free publication in THE MUNICIPAL INDEX a list of their municipal products with a description sufficient to indicate their range and application. All who responded will be found listed under the products they make. By submitting this information, these manufacturers have shown their interest in obtaining governmental business. Officials and city purchasing agents are urged to advise THE MUNICIPAL INDEX of the omission of any national suppliers from these lists.

In addition to such special studies as street lighting costs per lamp in many cities and modern customer accounting and utility billing, there are the regular features, including directories of city officials and the atlas of state maps and town populations.

River Front Development

CITIES AND RIVERFRONT LANDS—*By York Willbern, Assistant Director, Bureau of Public Administration, University of Alabama, University, Ala.* 1947. 61 *pp.*

An excellent discussion of factors involved in the planning of riverfront land uses. The report points out how many cities have failed to take full advantage of opportunities for developing their waterfront locations and resources for commercial, recreational, or other purposes. It concludes that, where an active government program of commercial development of a riverfront is undertaken, the responsibility for administration should ordinarily be placed on the municipal level, and that the function should be handled within the regular governmental structure.

The report was stimulated to some extent by the Tennessee Valley Authority's creation of reservoirs and river-development opportunities adjacent to communities in the region. At the Universities of Alabama, Kentucky, and Tennessee, the problem of municipal relations to riverfront properties was used as the subject of a thesis by a graduate student. General coordination was provided by the author of this study.

Housing Research Reports

TECHNICAL BULLETIN—*Housing and Home Finance Agency, Washington* 25, *D. C. No.* 1, *November* 1947. 34 *pp. Available upon request to municipal officials and others concerned with housing and construction.*

This new publication will report on research efforts and experiments by various government agencies, universities, and private firms throughout the country concerned with making more good housing available at lower cost. The first issue contains such articles as "Lower Costs Through Better Codes," "Housing Research," "Insulation of Concrete Floors in Dwellings," and "Earth Constructions." It also carries a bibliography of recent books, pamphlets, bulletins, and other materials available on housing experiments and techniques. The bulletin will be issued at frequent intervals, but not on a fixed calendar basis.

Full Employment Locally

FULL EMPLOYMENT IN YOUR COMMUNITY—*A Report of the W. E. Upjohn Institute for Community Research. Public Administration Service,* 1313 *E.* 60*th St., Chicago* 37, *Ill.* 1947. 119 *pp.* $2.75.

This book attempts to set forth what has been done and what can be done at the community level to maintain a high level of continuous employment. Essentially, its purpose is to bring together in one place all of the major suggestions that have been made, with the thought that such experience and information will prove helpful to other communities that undertake programs looking toward the attainment of a high level of stable employment.

One chapter deals with the policies and programs local governments can follow to promote full and stable employment in the community. It is pointed out that, as an employer, local government directly affects employment opportunity in the community and that, as a coordinating agency, it influences indirectly the economic life of the entire community.

A survey is given of representative local plans prepared under public or private auspices. Other chapters deal with industrial, agricultural, labor, and business proposals for expanding and stabilizing employment.

The last chapter contains some suggestions for organizing the citizens of a local community into groups for putting into action the various programs for full and continuous employment.

Building Codes

MODERNIZE BUILDING CODES NOW—*"Tomorrow's Town," November* 1947 *issue. National Committee on Housing, Inc., One Madison Avenue, New York* 10, *N. Y.* 4 *pp.*

A symposium on the new Massachusetts approach to the building code problem. Provisions of the legislation giving the Massachusetts State Board of Standards wide authority over local building codes are described by Burnham Kelly of the Albert Farwell Bemis Foundation, Massachusetts Institute of Technology. Comments are also made by William J. Levitt, real-estate operator; Howard P. Vermilya, vice-president, American Houses, Inc., and George E. Strehan, consultant, Basic Building Code, Building Officials Conference of America.

Editorially, *Tomorrow's Town* declares that the importance of making an immediate start on building code modernization cannot be overstressed, as now is the time that interest and concern are at the peak.

Youth Councils

HOW CAN YOUTH WORK FOR A BETTER COMMUNITY—*December* 1947 *issue of "Talk It Over." National Institute of Social Relations, Inc.,* 1244 *Twentieth Street, N.W., Washington* 6, *D.C.* 1947. 20 *pp.* 10 *cents.*

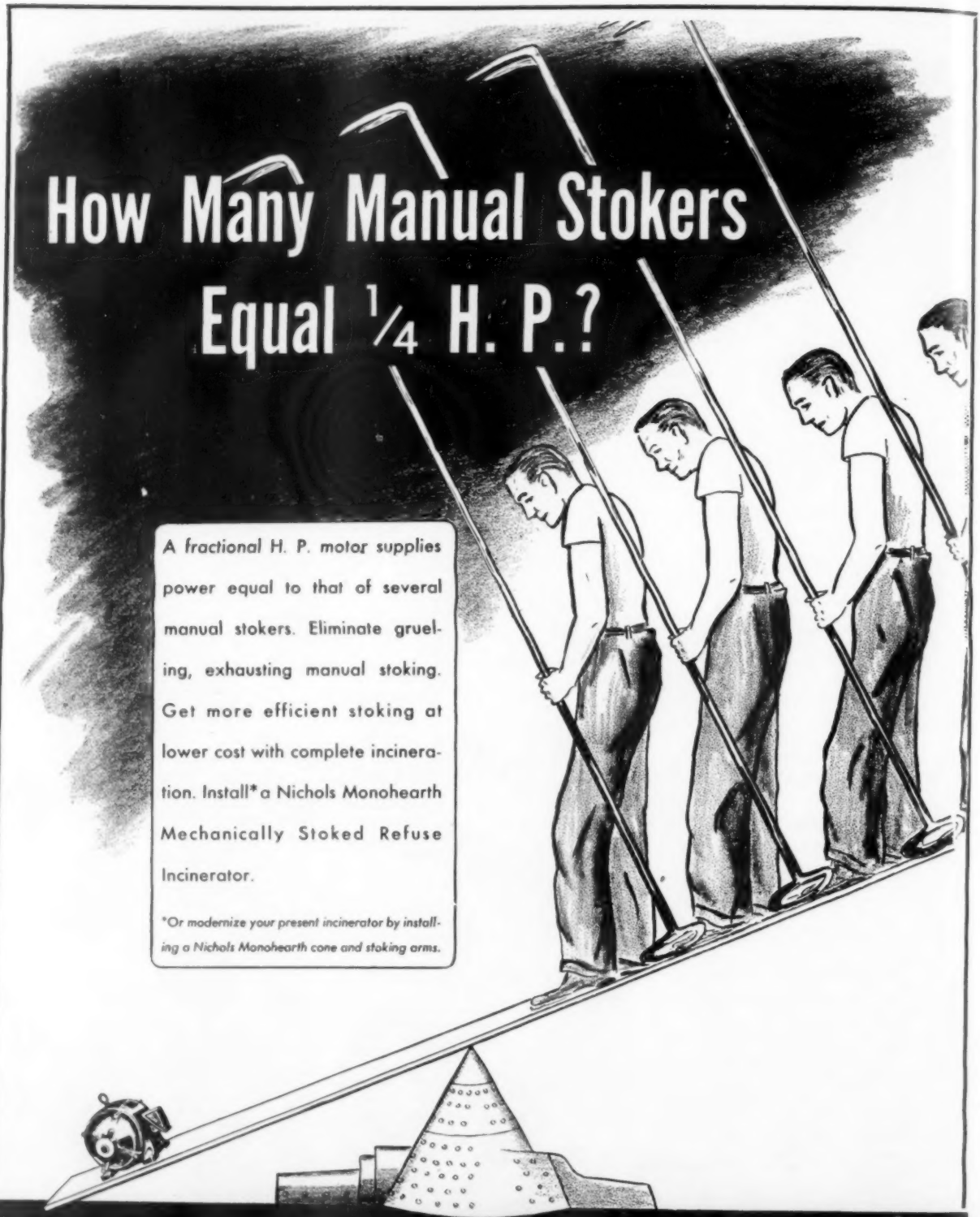
This discussion guide examines the proposal for the establishment of local youth councils to fill the need for democratic experiences and help reduce delinquency and crime. The councils would be representative bodies, made up of delegates from each of the youth groups in town. One of their chief values would lie in providing a common meeting-ground for members of youth groups to get together and pool their efforts toward improving human relations.

Canadian Planning

COMMUNITY PLANNING CONFERENCE—*Department of Planning and Development, Queen's Park, Toronto* 2, *Ontario.* 1947. 96 *pp.*

These proceedings help to illustrate the excellent progress being made in Canada to promote and develop community planning. The discussions and talks were all interesting and provide considerable information on Canadian planning organization.

How Many Manual Stokers Equal ¼ H. P.?



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Subsidizing Industry in Wisconsin

SUBSIDIZATION OF INDUSTRY IN FORTY SELECTED CITIES IN WISCONSIN, 1930-1946—*By W. D. Knight. The University of Wisconsin, Bureau of Business Research and Science, 404 Sterling Hall, Madison, Wis.* 1947. 206 *pp.* $1.00.

Covering 130 cases of industrial subsidization in 40 Wisconsin communities during the period since 1930, the report concludes that, in general, these promotions seem substantially to have accomplished their purpose in terms of employment and payroll. The general conclusion is qualified by the observation that it is based upon the data of recent prosperous years, and that, in a number of the cases studied, the net costs of the subsidies are large, both absolutely and compared with the results obtained.

The report shows that municipal participation and subsidies were a practical necessity because of the lack of capital from private sources in many cases studied, even though the legality of using municipal funds for subsidizing purposes was open to question. It declares that subsidies, limited in amount or self-liquidating in nature, especially if based on a careful selection of prospective industries and proper arrangements or understandings with the subsidized companies, are likely to be consistent with basic economic principles and with the promotion of public welfare. On the other hand, subsidies unlimited in size and duration or hastily conceived and executed are likely to result either in the establishment of firms not economically suited to the community, with consequent waste of subsidy funds, or in uneconomic and undesirable competition in subsidization among communities.

Further studies are required to determine more fully the relation of industrial subsidization to municipal finance and to the economics of the location of industry in order that standards and limitations for industrial promotion can be further developed the report concludes.

Cost Estimating

CONSTRUCTION ESTIMATES AND COSTS—*By H. E. Pulver, Professor of Civil and Structural Engineering, University of Wisconsin. McGraw-Hill Book Co., New York.* 1947. 652 *pp.* $6.00.

This book brings up to date information on construction costs that had been published in the 1940 edition. The book is carefully documented with tables and illustrative examples. It covers in detail such cost factors as excavations, piling and bracing, concrete, masonry, damp-proofing and water-proofing, wood construction, structural steel, roofing and flashing, lathing and plastering, heating and air conditioning, plumbing, electrical work, painting, papering, glazing, heavy machinery, construction plant and equipment, and overhead and profit. Information is given on the basis of the time in hours required to do a certain amount of work. This is in contrast to the more conventional method of the amount of work done per hour. This permits the use of multiplication instead of division in preparing the estimates and has a tendency to reduce the mathematical errors.

The Philadelphia Exhibit

PHILADELPHIA PLANS AGAIN—*Article in The Architectural Forum, December* 1947. 22 *pp.* 350 *Fifth Ave., New York* 1, *N. Y. Single issue,* $1.00.

Philadelphia's mammoth $340,000 planning exhibit held last September and October, to which more than 385,000 Philadelphians came, receives complete coverage in the December *Forum.* Next best thing to having actually visited the exhibit is to study this lavishly illustrated article describing all its major highlights. Of special interest is the description of how the vigorous citizens planning movement in Philadelphia got started and gained support. Readers of THE AMERICAN CITY are also referred to "The City Tells Its Story," pp. 86-88 of the October 1947 issue of this magazine, which contained a briefer account of the exhibition's features.

Planning and Civic Annual

AMERICAN PLANNING AND CIVIC ANNUAL, 1947—*edited by Harlean James. American Planning and Civic Association, 901 Union Trust Building, Washington, D. C.* 214 *pp.* $3.00.

The volume is a record of some recent civic advances in the fields of planning, parks, housing, neighborhood improvement and conservation of natural resources, including addresses, discussions and round tables presented at the Citizens' Conference on Planning, held at Milwaukee, Wis., April 28-30, 1947, and the papers given at the National Park Conference held in the Interior Building, Washington, D. C., on April 1, 1947.

Of special interest to municipal officials should be the sections on "County and Metropolitan Planning," "Urban Planning and Replanning," "Putting the Plan Into Effect," and the round table session report on "Planning Small Towns." The section on "Planning Education" reveals some of the progress made during the year in enlisting citizen interest in planning and the results of such interest. Good material is also included on the forward-looking planning program of the city and county of Milwaukee.

Housing and Community Services

COMMUNITY SERVICES AND PUBLIC HOUSING—*National Association of Housing Officials,* 1313 *E. 60th St., Chicago* 37, *Ill. November* 1947. 13 *pp.*

This report of the Joint Committee on Housing and Welfare of the National Association of Housing Officials aims to define relationships among housing authorities, community services, residents of housing developments, and the community at large. A series of charts lists specific responsibilities of housing authorities and community agencies—to each other and to public housing residents—in social planning and coordination; civic participation; education, recreation, and group work; economic assistance; individual social adjustment, and health.

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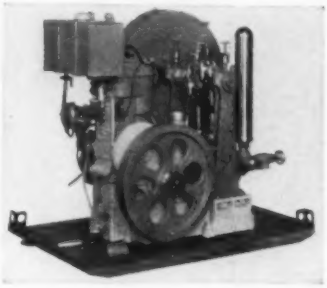

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BRIDGEPORT, CONN.
1450 Mi-Co's., in service
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The Police and Race Relations

THE POLICE AND MINORITY GROUPS—*By Joseph D. Lohman. Chicago Park District, Administration Building, Burnham Park, 425 East Fourteenth Boulevard, Chicago, Ill.* 1947. 133 *pp.*

The manual, prepared for use in the Chicago Park District Police Training School, under the direction of Roger F. Shanahan, Chief of Police, points out that the problem of the relations between various racial and nationality groups is especially critical in democratic countries. In a democracy like our own, the manual declares, the public agencies must be constantly alert to their responsibility in maintaining equal services for all groups at all times.

The volume contains sections on the background, dimensions, and scientific facts about racial and minority group conditions in the country and their effect on the Chicago metropolitan area. Other sections include "The Social Situations in Which Tensions Arise," "The Role of the Police Officer in Dealing with Tensions," and "The Law and Administration Controls As They Affect Human Relations." The appendices list excerpts from Illinois Statutes and the Municipal Code of Chicago as they affect race relations. There is also a selected list of booklets, pamphlets, and films on human relations.

Research Projects Listed

CURRENT RESEARCH PROJECTS IN PUBLIC ADMINISTRATION — *Public Administration Service, 1313 E. 60th St., Chicago 37, Ill. November* 1947. 39 *pp.* $1.00

Based upon reports from various university faculty members, this list provides information about current research activities in institutions throughout the country and serves as a mean for the exchange of information among scholars with an interest in public administration. Sections are included on city manager government, housing, intergovernmental relations, municipal finance and taxation, planning, and other munipal government functions.

Accident Facts

ACCIDENT FACTS—*The National Safety Council, 20 North Wacker Drive, Chicago 6, Ill.* 1947 *edition.* 96 *pp.* 50 *cents.*

This 27th edition of *Accident Facts* reports a wide variety of facts about home, motor-vehicle, and other public, farm, and occupational accident experience for 1946, and it contains comparisons with earlier years.

Maintenance System for Municipal Employes

INSTITUTIONAL EMPLOYEE MAINTENANCE — *By John C. Crowley. Public Administration Service, 1313 E. 60th St., Chicago 37, Ill. Publication No. 99.* 1947. 14 *pp.* $1.00.

A major purpose of this study is to develop a set of concepts basic to an understanding of a maintenance system for municipal employes and a working approach to maintenance evaluation. The study points out that where employe maintenance is provided, such as meals, living quarters, laundry service, etc., a number of peculiar and relatively difficult salary and other administrative problems are encountered. Particular reference is made to public hospitals and to penal and correctional institutions.

Pittsburgh Plans

PITTSBURGH, CHALLENGE AND RESPONSE—*Allegheny Conference on Community Development, Pittsburgh, Pa. Edward R. Weidlein, chairman.* 1947. *Illus.* 26 *pp.*

Emphasizing the benefits of united action, this elaborate graphic report describes the program of the Allegheny Conference on Community and declares that Pittsburgh has accepted the challenge to renew itself, rebuild, and develop its human values.

The record of achievements in the Pittsburgh area is already an impressive one with regard to legislation, plans, and construction programs for housing, smoke control, pollution, refuse disposal, recreation, traffic parking, and airports.

New York City's Finances

MUNICIPAL DOLLARS AND SENSE—*By Pearl Beinstein Max. League of Women Voters of the City of New York, 461 Fourth Ave., New York 16, N. Y. November* 1947. 15 *pp.* 10 *cents.*

A well-written little pamphlet which describes how New York City obtains its revenue and how it spends its billion-dollar budget. The pamphlet shows that 19% of the city's total budget, about $199,000,000 annually, is spent for debt service. Some methods of improving the city's financial situation are discussed, and the final section points to several things that the citizen can do to understand the city's position and work for its betterment. Little mention is made, however, of the importance of strengthening the City Planning Commission and obtaining a comprehensive master plan as a major means for securing coordinated recommendations and action on the city's physical improvements.

The Science of Administration Public and Private

PAPERS ON THE SCIENCE OF ADMINISTRATION—*Edited by Luther Gulick and L. Urwick. Institute of Public Administration, 684 Park Ave., New York 21, N. Y.* 1947. 186 *pp.* $3.00.

Out of print for several years, this recognized text for business executives, public administrators, and advanced students in the field, had been made available again at the original price, without abridgment of text or charts.

Published 10 years ago, the collection contains contributions by outstanding authorities in the theory and practice of administration and organization, both public and private, in the United States and Europe. Much of the philosophy, nomenclature, and procedural matter found in the volume has received wide acceptance and application.

John BEAN CONCENTRATE APPLICATORS

APPLY DUST OR CONCENTRATE FOR PEST CONTROL WITH New ROTOMIST!

The new John Bean ROTOMIST is a new development for shade tree pest control. It applies dry dust, wet dust, or concentrates. Its aerodynamic design releases micron size spray particles that give complete, thorough coverage with a minimum of drift, and eliminates any deposit on autos or homes.

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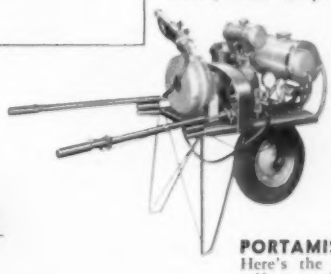

RID RECREATIONAL areas of flies and mosquitos. Either Rotomist or Portamist will rid entire areas of these pests quickly and cheaply.

PORTAMIST IS NEW, too! Here's the new, fully portable, self-powered, PORTAMIST for concentrate application in areas not readily accessible to larger equipment. It's ideal for smaller parks, golf courses, or for small city departments. Handles as easily as a wheel barrow, and does a full-fledged job. Moderate in cost! It will pay you to investigate. A free catalog on PORTAMIST is yours for the asking.

ROTOMIST ACCURATE CONTROL puts the material where you want it. There's less waste of material, savings in time and money.

ROTOMIST CAN IMPROVE SANITATION and keep flies and other pests under control. You'll use it in alleys, around dumps, swamps and other insect breeding places.

John Bean high-pressure sprayers are built in a range of models and types delivering up to 600 gallons per minute at 800 lbs. pressure.

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DIVISION OF FOOD MACHINERY CORPORATION
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taking the *waste* out of waste disposal!

There's no wasted time, money, or land with the modern method of sanitary fill waste disposal . . . an Oliver "Cletrac" tractor and a Drott Bull Clam Shovel.

This handy "one-man crew" digs trenches, packs down refuse in the trenches, covers it over with clean dirt, and levels off the area. Garbage dumped is covered the same day . . . eliminating fire hazard, objectionable odors, breeding grounds for flies, rats, etc., and preventing loose waste and dust from blowing over the adjacent neighborhood. All this is accomplished at a remarkably low cost and with far less manpower.

In addition to the many economical advantages of this modern method of waste disposal, no land is wasted. The area is left in a perfectly landscaped condition suitable for park, playground or building purposes.

Oliver "Cletrac" tractors' exclusive steering principle gives them the greater maneuverability required for the restricted operating conditions of many municipal jobs. They are ruggedly built for long, economical service and are unusually accessible for easy maintenance.

For all the facts, and for complete details on modern sanitary fill methods, write The OLIVER Corporation, Industrial Division, 19300 Euclid Avenue, Cleveland 17, Ohio.

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Spreading and compacting the rubbish

"THE SIGN OF EXTRA SERVICE"

Covering trench with layer of clean dirt

The Role of Higher Education

HIGHER EDUCATION FOR AMERICAN DEMOCRACY, VOL. I, ESTABLISHING THE GOALS—*A Report of the President's Commission on Higher Education. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.* 1947. 103 *pp. 40 cents.*

This volume sets the general pattern for the entire six-volume report of the President's Commission on Higher Education. The Commission was charged with the task of defining the responsibilities of colleges and universities in American democracy and in international affairs—and, more specifically, with re-examining the objectives, methods, and facilities of higher education in the United States in the light of the social role it has to play.

The importance of adequate preparation for the tasks of citizenship is emphasized in the report, which comments on the generally low level of civic knowledge, even of college graduates. One of the prime objectives of general education, the report declares, is to provide the student with learning and experience that will enable him "to participate actively as an informed and responsible citizen."

Planning and Housing Reports

CINCINNATI, OHIO — Motorways. Published by City Planning Commission. 1947. Tables. Maps. 196 pp. $1.00.

HARTFORD, CONN.—Coordinated Transportation for Hartford. 1947. Prepared by the Department of Engineering. Maps. 55 pp.

HARRISBURG, PA.—Pennsylvania Planning. 1947. Issued by Pennsylvania Department of Commerce State Planning Board. Illus. 27 pp.

MEMPHIS, TENN.—Out of Balance. Memphis Housing Authority, 254 N. Lauderdale. Annual Report, 1946-47. Illus. 31 pp.

NEW YORK, N. Y.—Department of Parks. Construction Schedule. 1947. Arsenal, 64th St. and Fifth Ave. Tables. Illus. 31 pp.

PATERSON, N. J.—Highway and Motor Vehicles. Part 2. Preliminary Report on Transportation in Passaic County. 1947. Maps. Mimeo. 35 pp.

PITTSBURGH, PA.—Report by the City Planning Commission. 1946. Tables. Mimeo. 41 pp.

WICHITA, KANS.—Housing in Wichita. 1947. Sponsored by the City Planning Commission, 304 City Building. Tables. 57 pp.

Other Reports Received

BOSTON, MASS.—Fifteenth Annual Report. 1947. Boston Municipal Research Bureau. 8 pp.

—Preliminary Report on a Master Highway Plan for the Boston Metropolitan Area. By the Joint Board for the Metropolitan Master Highway Plan. 1947. Maps. Illus. 23 pp.

CONCORD, N. H.—The Ninety-fourth Annual Report of the City of Concord, 1946. Authorized and published under the supervision of the City Planning Board by the Mayor and Board of Aldermen. Maps. Illus. 77 pp.

DETROIT, MICH.—Annual Report by the Auditor General. 1947. Benjamin J. Tobin, Auditor General. Tables. 127 pp.

EASTON, PA.—Sixteenth Annual Report of the City of Easton. 1946. Compiled by C. E. Rogers, City Clerk. Tables. 72 pages.

ELIZABETH, N. J.—Twenty-Five-Year Report of the Union County Park Commission. Administration Building, Warinanco Park. 1947. 48 pp.

LOS ANGELES, CALIF.—Organization, Administration and Management of the Administrative Services, Part V. 1947. Bureau of Budget and Efficiency, 120 City Hall. Mimeo. Tables. 46 pp.

MIDLAND, MICH.—Saginaw Valley Regional Planning Commission. Phelps Vogelsang, Chairman. 1947. Mimeo. 6 pp.

NEW BRUNSWICK, N. J.—Proceedings of the Thirty-Fourth Annual Meeting of the New Jersey Mosquito Extermination Association. Charts. Illus. 209 pp.

NORTHAMPTON, PA.—The Borough of Northampton. Part I—$170,000 Proposed Bond Issue. Part II—Financial Study. Tables. Mimeo. 21 pp.

—City of Sunbury, Northumberland County. Part I—$125,000 Bond Issue. Part II—Financial Study. Tables. Mimeo. 22 pp.

PHILADELPHIA, PA.—Repair of Sanitation and Highway Equipment by Robert K. Sawyer, Director. Bureau of Municipal Research of Philadelphia. 1947. 32 pp.

PORTLAND, ORE.—Annual Report of the City Auditor. 1947. Will Gibson, City Auditor. Tables. 129 pp.

ROCHESTER, N. Y.—Rochester Reports for 1946. Prepared and edited by the Division of Public Relations, Rochester Department of Commerce. Illus. 23 pp.

ROCKLAND, MAINE—Ninety-fourth Annual Report. 1947. Illus. Tables. 63 pp.

SAN DIEGO, CALIF. — Yearbook, City of San Diego. 1946-47. Office of the City Manager, 88 pp.

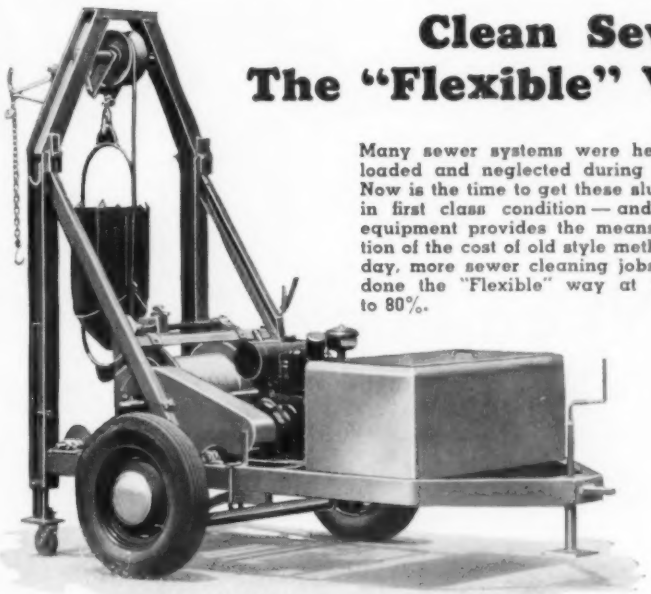
SEATTLE, WASH.—Election Problems and Voter Participation. 1947. Bureau of Governmental Research and Services, University of Washington. Charts. Mimeo. 27 pp.

VASSAR, MICH.—A Report of the Citizens. 1947. 8 pp.

VILLAGE OF WINNETKA, ILL.—A Question and Answer Report for the Fiscal Year, 1946-47 29 pp.

WASHINGTON, D. C. — Large-City Finances in 1946. Bureau of Census, 1947. Charts. 58 pp.

"FLEXIBLE"
POWER BUCKET MACHINES



Clean Sewers The "Flexible" Way

Many sewer systems were heavily overloaded and neglected during war years. Now is the time to get these sluggish lines in first class condition — and "Flexible" equipment provides the means at a fraction of the cost of old style methods. Every day, more sewer cleaning jobs are being done the "Flexible" way at savings up to 80%.

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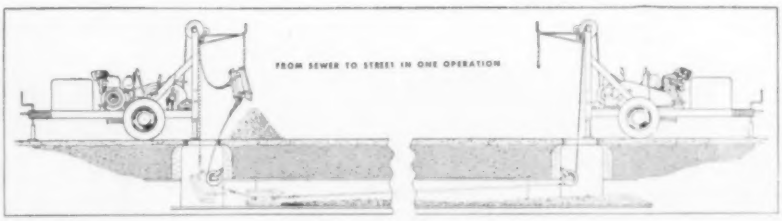
POWER — DEPENDABLE OPERATION — SPEED — SAFETY — ECONOMY—LONG WORK LIFE



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When Snow-Time Means Time and Money—

It pays to put a Snogo to work on your city streets. Don't just push your snow to the curb, building snow banks to delay traffic and add to the hazards of winter driving. Remove the snow completely. Snogo will throw the snow into a parkway or load it directly into a truck.

Snogo is the fastest known method of loading snow, filling the largest truck in 10 to 20 seconds. Due to the force with which Snogo handles the snow, it compacts the truck to greater capacity than is possible with old fashioned hand labor. Your truck time and costs go down.

Snogo cleans your city streets right down to the pavement and against the curb. It means safer traffic without delays, better business facilities, and is the faster, more economical solution to the problem of city snow removal.

Look into the experience of other cities on their snow problems. We'll be glad to give you all the facts. Drop us a line.

POSITIVELY GUARANTEED to handle any snow condition that will ever occur on any airport

KLAUER MANUFACTURING CO.
DUBUQUE, IOWA

SNOGO — A SNOGO For EVERY BUDGET

News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

Ford Now Makes A 3-Ton Truck

The streamlined 1948 Ford truck models, new from the wheels up, include two new series—F-7 and F-8—having maximum gross vehicle weights

The 1948 series F-5 1½-ton, 134-inch-wheelbase truck (above) with a 9-foot stake body, and the F-8 3-ton truck (below) with 195-inch wheelbase—the largest truck ever built by the Ford Motor Co.

of 19,000 and 21,500 pounds, respectively. Another new series is the six-cylinder cab-over-engine model. Three new power plants are available—a 95-hp six-cylinder engine, a 100-hp V-8, and a 145-hp V-8.

Greater front-end strength has been achieved through improved sheet-metal suspension and heavier construction. Fenders are heavier and wider and provide greater tire clearance. Another design advancement is a heavy channel-steel front bumper attached directly to extend frame side rails. The bumper is, in effect, an extra cross-member providing greater rigidity and impact strength.

The new cabs provide up to 7 inches greater width and also more headroom. A one-piece windshield provides increased visibility. The rear window has been enlarged.

The complete line of 1948 trucks includes the nominally rated ½-ton series of 114-inch wheelbase with a deluxe delivery model and standard pickup, panel, and stake bodies; ¾-ton regular and heavy-duty series, 122-inch wheelbase with express and stake bodies; 1-ton, 134-inch wheelbase series with stake body and single or dual rear tires available; 1½-ton heavy-duty series with 134 and 158-inch wheelbase; 1½-ton and 2-ton heavy-duty, cab-over-engine series with 110, 134, and 158-inch wheelbase; 2-ton heavy-duty of 134 and 158-inch wheelbase.

The three engines also have new distributors and wiring, located where they are easily accessible for servicing. Valve springs are shot-blasted and rust-proofed. Crankshafts and connecting-rod bearing inserts are oversize. Higher-capacity generators deliver maximum output at low engine speeds. The equipment includes a new high-volume replaceable-element oil filter.

The new Ford six-cylinder engine has aluminum alloy pistons with four rings above the wrist pin. The compression ratio is 6.8 to 1. A new high-lift camshaft opens valves wider and faster, resulting in more efficient intake and exhaust.

Greater rigidity has been achieved in the frames by extending the side rails to which are attached the heavy channel-steel front bumper.

Clutches on the larger trucks are 12 inches in diameter. These trucks also have 5-speed transmissions. The F-7, with maximum gross vehicle weight of 19,000 pounds, has a single-speed heavy-duty axle. The F-8, with a gross vehicle weight of 21,500 pounds, has a two-speed axle, making 10 speeds available. J. D. Ball is director of the truck and fleet sales department.

Scherer Appointed by Ransome

The Ransome Machinery Co., Dunellen, N. J., has appointed W. H. Scherer to the position of general manager, and has elected him a director of the company.

W. H. Scherer

Formerly assistant to the vice-president in charge of manufacturing in the Worthington Pump and Machinery Corp., Mr. Scherer has been serving as acting manager of Ransome, a subsidiary of Worthington, since June, 1947.

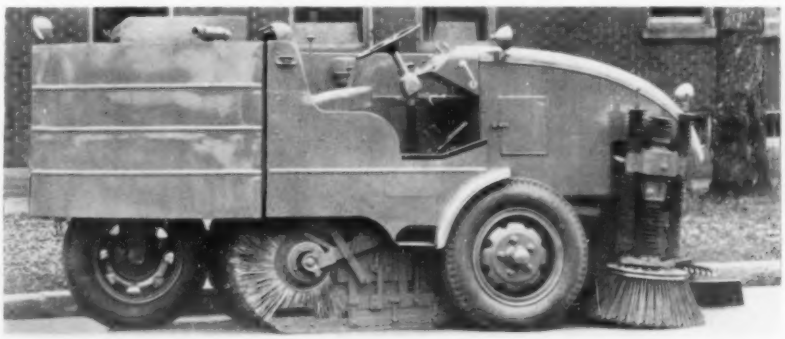
Short-Turning Street Sweeper With 6-Foot Swath

The Gutter-Snipe is designed to meet the demands of present-day streets, be they wide, narrow, or cluttered with parked cars and traffic islands. Short, narrow, and with a short turning radius, this street sweeper clears a path 6 feet wide.

The pick-up broom on this improved Model E Gutter Snipe is supported in self-aligning bearings which permit uniform sweeping on uneven or crowned pavements, while the suspension of the broom allows the correct pressure on the pavement for most effective sweeping. The gutter broom pivots so that damage to the machine may be avoided when the broom runs against the curb. The hopper carries from 1 to 1¼ yards of refuse; its independent control permits carrying a load at high speed to any point for dumping.

The sprinkling attachment applies a fine spray that lays the dust without creating mud. Steering is from the single rear wheel, permitting an unusually high degree of maneuverability, and the Gutter-Snipe can turn within a circle that is 19 feet in diameter.

Manufactured by the Municipal Supply Co., South Bend, Ind., the machine has a 4-cylinder engine.



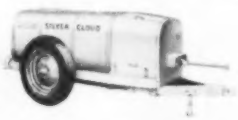
The operator's seat gives him a clear view of the gutter broom as aligned with the curb line, permitting facile control.

New MYERS TREE SPRAYERS

Types, Capacities, Pressures for Every Need

Load this compact new Myers Sprayer on a truck and you're ready for fast, thorough pest control — complete coverage spraying to the tops of tallest trees.

4-wheel engine powered models; capacities up to 50 gpm., pressures up to 600 lbs.



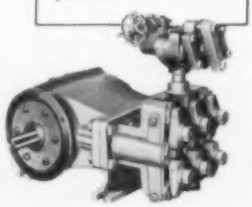
2-wheel power take-off and engine powered models; capacities up to 50 gpm., pressures up to 800 lbs.

ECONOMICAL EFFICIENT

Amazing efficiency and economy are achieved by Myers famous Bulldozer Pumps. They're compact and powerful, matchless in performance for their size and weight. And they're standard equipment throughout the newly designed line of Myers Silver Cloud Sprayers. Complete range of wheel and skid type models. Capacities up to 50 gpm; pressures up to 800 lbs. Wide choice of Myers Spray Guns with many advanced features. Mail the coupon.

NEW TRIPLEX BULLDOZER PUMP

Less size, less weight, less power required. Pressures up to 800 pounds.



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Send your new Power Sprayer Catalog.

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THREE ROAD MAINTENANCE *JOBS* WITH ONE UNIT

1

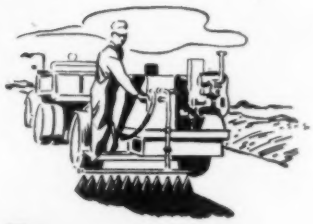
1. **Crack Filling** — there's a Pouring Pot Outlet on the No. 101 Utility Spray Tank for this kind of work, no need to have special equipment for this type of maintenance, when you get it as part of this **utility** unit.

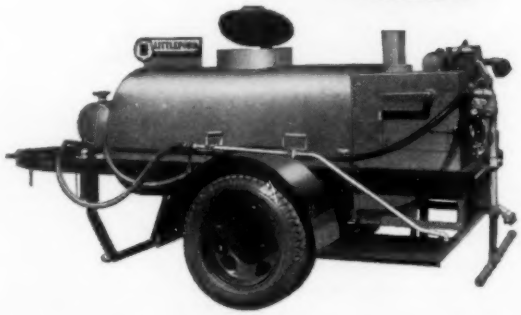
2

2. **Hand Spraying** — for Road, Street or Highway patch work, the No. 101 Utility Spray Tank has a Hand Spraying Attachment. Only one man is needed to operate this attachment. It's the second job available wih this **Utility** unit.

3

3. **Small Application Spraying**— Spray Bar up to 10 feet in width can be used for spraying small maintenance jobs, shoulder widening work, seal coating, etc. Here's the third job you can do with this No. 101 Utility Spray Tank.





Utility is the word for it. Three jobs in Road, Street or Highway maintenance done with one unit—the Littleford No. 101 Utility Spray Tank. Why purchase a separate unit to do each job, when all three jobs can be done with one? Here is a packaged piece of equipment containing **utility**; made in sizes from 400 to 1,000 gallons. Get more details by writing for Bulletin No. 5.

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"Tankar" Steam Heaters	"Spray Master" Pressure Distributors	
"Kwik-Melter" Boilers Kettles	Highway Brooms	Asphalt Supply Tanks
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LB LITTLEFORD

BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE · 1900

LITTLEFORD BROS., INC.
500 E. Pearl St., Cincinnati 2, Ohio

Gorman Rupp's New Pumps

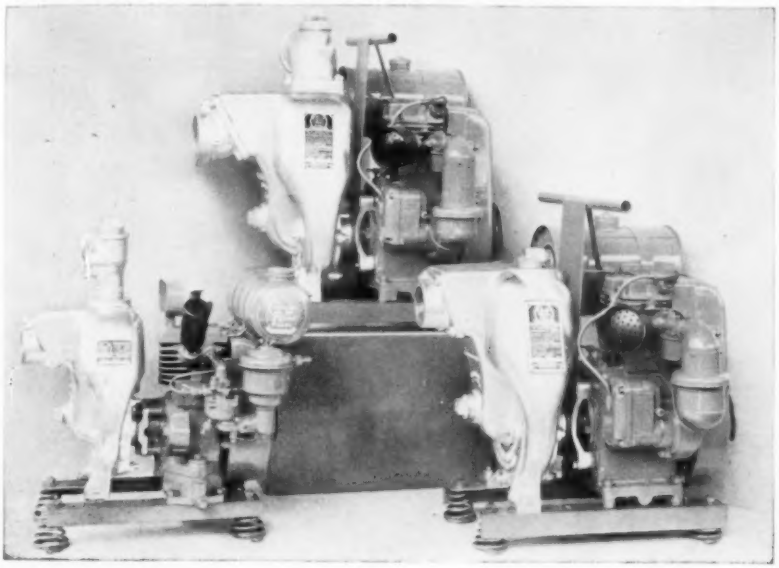
A major improvement in the line of lightweight centrifugal self-priming pumps being manufactured by The Gorman-Rupp Co., Mansfield, Ohio, is faster automatic priming.

Priming at higher suction lifts, higher pressures and capacities result. The pumps are classified as general utility pumps for use where lightweight, easily transported, and powerful pumps are needed.

The new Gorman-Rupp Midget is a 1½-inch pump, powered by either a Lawson or a Briggs & Stratton 1½-hp single-cylinder 4-cycle air-cooled engine. The pump has a maximum capacity of 86 gpm at 30-foot head. Maximum lift is 30 feet, and priming time is 1 minute 15 seconds at 25-foot suction lift. The pump weighs 62 pounds.

The Hawk 2-inch pump is powered by a 2.8-hp Wisconsin Model AB single-cylinder 4-cycle air-cooled engine. It has a maximum capacity of 156 gpm at 30-foot head. Maximum lift is 30 feet, and its priming time is 47 seconds at 25-foot suction. It weighs 110 pounds.

Powered by a Wilson 5-hp single-cylinder 4-cycle air-cooled engine, the Eagle 3-inch pump has a maximum capacity of 280 gpm at 30-foot head; maximum lift is 30 feet; priming time is 1 minute 19 seconds at 25-foot suction lift and its weight is 117 pounds.



From left to right: the Midget Hawk, and Eagle light-weight pumps.

New Motors from Allis-Chalmers

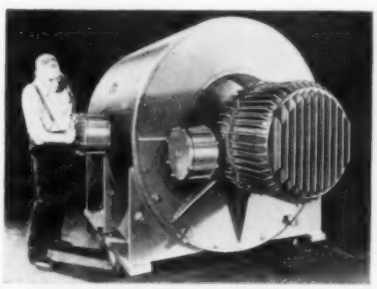
The Allis-Chalmers Mfg. Co., Milwaukee, Wis., is manufacturing a new line of improved totally enclosed, fan-cooled wound-rotor motors that are built with an improved tube-type air-to-air heat exchanger. This type of exchanger, which was first used for squirrel-cage motors, permits an appreciable reduction in size as compared to the size that would otherwise be necessary for the power produced.

To assure trouble-free operation under unfavorable atmospheric conditions, the motors can be built with stainless steel ventilating tubes, fans, and end plates, and cast-iron terminal boxes and collector-ring enclosures.

Its collector assembly is cooled by radiation, with internal air circulation provided by fan blades mounted on the collector assembly.

Also available in squirrel-cage and synchronous types, the motors are suited to chemical-plant work, where previous cast-iron motors have been used exclusively. For this type of service also, the tubes and stator end plates can be made of stainless steel or any non-corrosive material that will not be affected by acids or alkalies. Where these special non-corrosive materials are used, cost of the motor is somewhat higher.

Power-plant service is another field in which this type of improved motor, available in sizes up to 3,000 horsepower, has found ready acceptance. In this field, it is used primarily for driving draft fans and other auxiliaries, either indoors or outdoors, where the atmosphere is detrimental to the operation of other types of motors.



This is a 500-hp, 2,300-volt, 3-phase, 60-cycle, 705-rpm Allis-Chalmers motor—one of the latest additions to the company's lines of motors.

De Laval Organizational Changes, Executive Promotions

Major executive promotions and organizational changes affecting sales production, and engineering divisions of the De Laval Steam Turbine Company, Trenton, N. J., have been announced.

J. P. Stewart

Under the reorganization, already in effect, a five-member executive committee has been created, consisting of H. L. Watson, president, serving as chairman; George C. Stoddard, chairman of the board; Henry W. Johnson, vice-president; C. Richard Waller, vice-president, and George W. Smith, Jr., assistant to the president.

In executive promotions, J. P. Stewart has been appointed manager of the newly combined commercial and marine sales divisions succeeding H. V. Petersen, who has retired after 34 years' service. H. G. Bauer, manager of the marine division, has been appointed executive engineer of the company. J. W. Hertzler, manager of worm-gear sales since 1924, has retired and is succeeded by W. A. Reynolds, who becomes manager of the combined IMO rotary-pump and worm-gear divisions. C. A. Jurgensen has been appointed acting works manager. Appointment of W. A. Neumann, Jr., as factory controller, assistant treasurer, and assistant secretary was announced previously.

New Concrete Lighting Standards Are Salt Resistant

Users of concrete street-lighting standards in coastal areas will be interested to learn that they can now obtain from the American Concrete Corporation, for a nominal cost, standards made with air-entraining cement, which is not affected by salt.

In the past, the effect of salt air on concrete poles has always been a problem, because of the resulting scale and rapid cracking which mar the beauty of an entire street-lighting installation. Recent and very satisfactory installations have been made on the Atlantic City boardwalk and the Galveston Sea Walk at Miami Beach, Fla.

The American Concrete Corp., 4701 North Lamon Street, Chicago, also recommends that reinforcing rods be galvanized as further insurance against rust damage in salt water atmosphere.

IN LANSING, MICHIGAN

"WE ARE UNANIMOUS IN RECOMMENDING DUALS"

says Sidney A. Anger, City Traffic Engineer

SCORES of other cities will agree 100% with Mr. Anger, because Duals have set the pace in performance ever since they were first made.

Their success in Lansing is typical. This Michigan city started with 616 Dual Automatic Parking Meters in 1941... now has 1050.

The reasons for Dual preference are easy to see. Designed and engineered like fine time pieces, Duals are accurate, precision-built instruments. They're built to last long—built to serve economically.

Duals have *proved* their dependability. Hundreds of cities in both the U. S. and Canada recommend Duals just as Lansing's City Traffic Engineer Anger does when he says—"We like Dual Automatic Parking Meters. We like the *service* the new Dual organization gives us."

Before you install *any* parking meter, find out about Dual's *plus* values. Write today for Bulletin DU-501, or ask our engineers for helpful survey service.

THE DUAL PARKING METER COMPANY

A subsidiary of The Union Metal Manufacturing Company

Milford Building • **Canton 2, Ohio**

WHEN IT COMES TO CONTROLLING PARKING YOU CAN DO IT BETTER WITH **DUALS**

New Lightweight Pumps For Utility Companies

A series of four self-priming aluminum centrifugal pumps aimed specifically for utility company requirements has been introduced by Marlow Pumps,

This Marlow pump has a rated capacity of 50 gpm.

228 Greenwood Ave., Ridgewood, N. J.

Pumps in the series range from 64 to 135 pounds. The largest, with 3-inch suction and discharge, occupies a 26-by-19-inch floor space. The smallest takes a 20-by-10-inch floor space, standing 19 inches high. All are powered by 4-cycle gasoline engines, governor-controlled.

All sizes are guaranteed to prime and reprime automatically on suction lifts to 28 feet high at sea level. Having no valves, nor auxiliary priming mechanisms, the new pumps require little servicing. There is only one working part that moves; the entire pump can be taken apart and reassembled within a few minutes.

One of the features of the pump is the absence of a clean-out hole; nevertheless, the pumps are still able to handle solids to ½ inch in diameter.

Longenecker New President of Le Roi

Following the resignation of C. W. Pendock as president of the Le Roi Co., 1706 South 68th St., Milwaukee 14, Wis., E. A. Longenecker, past president of the Lauson Division of the Hart-Carter Co., was elected president.

Longenecker

Mr. Longenecker is fully familiar with the manufacture of Le Roi products—engines, compressors, rock drills, generator sets, and highway mowers — having been an instructor in engine design at the University of Wisconsin, as well as in an industry closely allied to Le Roi's.

PLAN on good fencing right from the start, and you assure adequate protection, simpler installation, and harmony with your landscaping. It becomes an integral part of your project design.

You'll find Cyclone Chain Link Fence is "Tops in Protection" for every type of job. It's built to stand up under difficult conditions of terrain and weather. Rails won't buckle. Gates won't drag. Posts stay in alignment. And there are types to fit all your varied requirements for public utilities, parks, playgrounds, pools, stadia and other projects.

Let our trained engineers furnish estimates and assist you with your planning—no obligation, of course. And send the coupon for your free copy of our fact book, "Your Fence". It will help you see for yourself why U·S·S Cyclone has become the most widely used property protection fence in the world.

Send for FREE 32-page Book. Profusely illustrated. A reference manual full of facts and specifications. Complete information on different types of fence, gates, athletic field equipment, and other property safeguards.

U·S·S CYCLONE FENCE DIVISION

(AMERICAN STEEL & WIRE COMPANY)
Waukegan, Ill. · *Branches in Principal Cities*
United States Steel Export Company, New York

CYCLONE FENCE DIVISION · American Steel & Wire Co.
USS
CYCLONE FENCE
UNITED STATES STEEL

Cyclone Fence
Waukegan, Ill., DEPT. **B28**

Please send me, free of charge, your 32-page book on Fence.

Name.....

Address.....

City..... State.....

Title or official capacity.....

UNITED STATES STEEL

SAN FRANCISCO INSTALLS THIRD TROLLEY COACH *Line...*

As part of a transit modernization program the Municipal Railway of San Francisco converted its "E" line from street car to trolley coach service on July 17, 1947. The line totals 6.7 round trip miles and is operated with 16 trolley coaches. It follows a veritable "roller coaster" route which includes grades as high as 7.3%, 8.2%, 11.9%, 12.1%, 13.6% and 18.9%. Despite the steepness of these grades "E" coaches, loaded to full capacity, climb them easily many times each day.

The silent electric ride on rubber is not new to San Francisco inasmuch as two other rail lines had previously been converted to this popular service. The original installation was made in 1935 on the No. 33 line, this was followed by the "R" line in 1941. According to railway officials still more lines are scheduled for change over to this modern service. First to be modernized will be the No. 5 line. Twenty-four additional trolley coaches have been ordered for its operation.

There are three important reasons why trolley coaches were selected to modernize some of the "Muni" system's most important rail lines:

1st THE PUBLIC LIKES THEM
2nd THEY BOOST REVENUE
3rd THEY ARE GOOD HILL CLIMBERS

TROLLEY COACH AND STREET CAR LINE MATERIAL AND CAR EQUIPMENT

Ohio Brass

MANSFIELD, OHIO

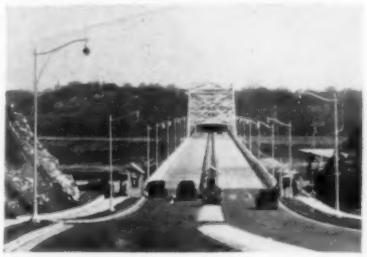
CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONTARIO

2814-1

Lighting Standard Company Changes Hands

The Sheffield Iron and Steel Co., subsidiary of the Barium Steel Corp., has purchased the plant, physical assets, and good will of the George King Co., Inc., Sheffield, Ala. The operations of this foundry have been placed under the direction of S. T. Jazwinski, vice-president. The eastern representative is William A. Daunt. With offices at 110 E. 42nd St., New York 17, Mr. Daunt is devoting full time to the sale of cast-iron standards for whiteways, parkways and bridges, and entrance standards, brackets and newells for public buildings.

The Sheffield plant has been modernized and can start making delivery of King lighting standards two weeks after receipt of the order. The foundry is capable of producing approximately 1,000 standards per month. In accordance with the requirements of American Standards I.E.S. recommendations, the plant will manufacture about 30 designs of pendant-type standards, with mounting heights of up to 33 feet to the light source, and hundreds of upright designs. Super-Ferronite is a material which will withstand shock and also corrosion from atmospheric conditions. Due to affiliation with the Barium Steel Corporation, which has 16 other subsidiaries and did over $40,000,000 of business in 1947, Sheffield Iron & Steel Company is in an excellent position to obtain raw materials for the manufacture of its products.



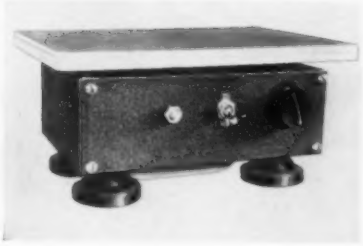
King Ferronite standards carrying modern luminaires on the O'Neill Bridge across the Tennessee River, connecting the cities of Florence and Sheffield, Ala.

Certain territories are still available for accredited key distributors and manufacturers' agents.

Syntron's New Paper Jogger And Vibratory Packer

The Syntron Co., 430 Lexington Ave., Homer City, Pa., has added to its line of paper joggers and vibratory packers a new small model with built-in variable control power. It is a 7-by-10-inch wooden deck standing 4½ inches high and weighing 13 pounds.

The jogger is useful in many municipal departments: for aligning quantities of invoices for filing, gathering service manuals, jogging quantities of sheets before cutting, feeding, or binding and for completely filling small phials, jars, cartons, or cans with bulk materials.



The Syntron electromagnetic vibratory packer.

New Insecticide for Insect Control

Thiophos 3422, formulated by the American Cyanamid Co., Agricultural Chemicals Div., 30 Rockefeller Plaza, New York, N. Y., is a new liquid insecticide which may be used as a spray or as a dust. Its chemical name is O, O-diethyl O-p-nitrophenyl thiophosphate. At concentrations effective for the control of injurious insects, Thiophos 3422 insecticide does not appear to injure plants, and no residue problems are anticipated. The product will be available this year.

Eastern Distributors of

FISHER M-SCOPE

and

LEAK DETECTORS

Joseph G. Pollard Co., Inc.

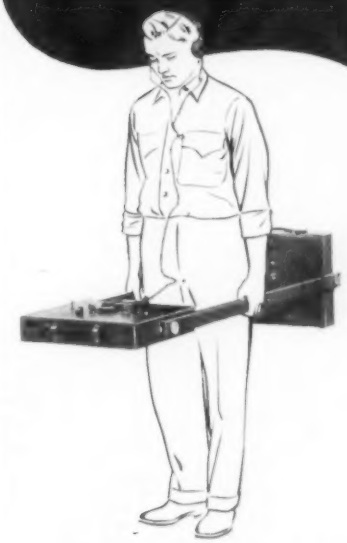
PIPE LINE EQUIPMENT

141 Ashland Place

Brooklyn 1, New York

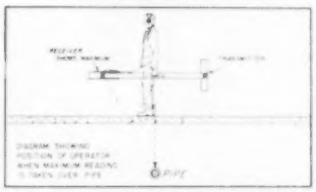
FISHER M-SCOPE

PIPE AND CABLE FINDER



One man with a Fisher M-Scope Pipe and Cable Finder can precisely, *locate, trace,* and determine the depth of a buried pipe or cable line . . . even thru concrete. The M-Scope does the job in a fraction of the time wasted in blind exploratory excavating.

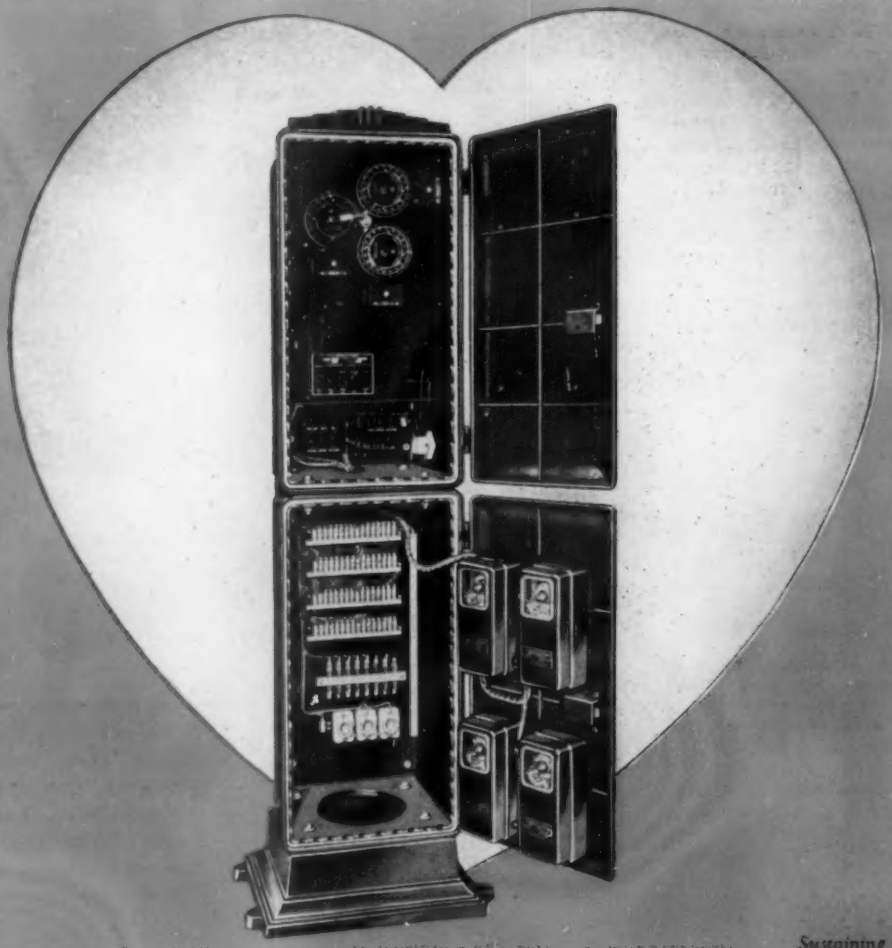
Fisher M-Scope Equipment from **$67.50** up



Fisher Research Laboratory, Inc.

PALO ALTO · CALIFORNIA

The HEART of traffic control is the CONTROLLER



Sustaining Member of I.M.S.A.

A system of traffic signals is absolutely dependent on efficient controllers for its successful operation, Every traffic problem requires a controller designed to meet its particular requirement. That is where

CROUSE-HINDS
Complete Line of Traffic Controllers

is invaluable to the traffic engineer. It includes every type of controller necessary to meet the most exacting requirements of modern traffic engineering.

The controller illustrated is type GSTD three-dial synchronous for interconnected operation. It provides three timing splits, three offsets and three total cycles. Transfer of timing dials is accomplished automatically by time switches in the supervisory control.

CROUSE-HINDS COMPANY
Syracuse 1, N. Y.

Crouse-Hinds Catalog 226 lists a complete line of traffic signals, beacons, flashers, and a series of controllers designed to help you solve your traffic control problems . . . from simple installations up to the most complex heavy traffic problem. Send for your copy.

A Nationwide Distribution Through Electrical Wholesalers

Offices: Birmingham – Boston – Buffalo – Chicago – Cincinnati – Cleveland – Dallas – Denver – Detroit – Houston – Indianapolis – Kansas City – Los Angeles – Milwaukee – Minneapolis – New York – Philadelphia – Pittsburgh – Portland, Ore. – San Francisco – Seattle – St. Louis – Washington. *Resident Representatives:* Albany – Atlanta – Charlotte – New Orleans – Richmond, Va.
CROUSE-HINDS COMPANY OF CANADA, LTD., *Main Office and Plant:* TORONTO, ONT.

TRAFFIC SIGNALS · CONDULETS · FLOODLIGHTS · AIRPORT LIGHTING

Pressure Distributors For Building Streets, Runways

The "Spray Master," manufactured by Littleford Bros., Inc., 457 E. Pearl St., Cincinnati 2, Ohio, handles tar, asphalt, emulsion, cut-back, and road oils for the construction of streets and airport runways.

Made in two models, the "Spray Master" may be obtained with an atomizing low-pressure burner and a Multi-Pass continuous-heat flue system, using fuel oil for fuel, and is either front-engine-mounted or rear-engine-mounted.

Equipped with a 375-gallon rotary-type pump, the "Spray Master" may be obtained in truck-mounted, semi-trailer, or "frameless construction" models. The last eliminates completely the frame, giving a low center of gravity, excellent distribution of weight, and lightweight construction.

47-Pound Engine, 2½ to 3 hp

The Clinton 4-cycle, air-cooled Model 1100 engine delivers from 2½ to 3 hp and weighs only 47 pounds, giving it a wide range of uses with portable equipment. Various bases are available for special mounting on different types of equipment.

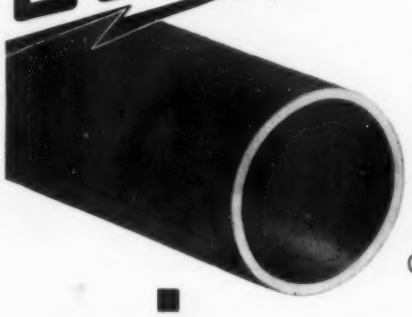
Gear reductions are available in ratios of 6 to 1, 4 to 1, and 2 to 1. The bore is 2⅜ inches; the stroke 1¾ inches; piston displacement 8.4 cubic inches; hp, 2½ to 3 at 2,600 to 3,600 rpm. Lubrication is the splash type, with oil level below all moving parts to insure non-interference; the oil capacity is 1½ pints; the fuel tank has a 5-quart capacity, Tillotson float-fed carburetor and bowl-type gasoline strainer with shut-off; the muffler is a low-pressure tubular type. The centrifugal-type governor is fully adjustable, fully enclosed, running in oil.

Gar Wood Appointments

The following appointments and promotions have been made by Gar Wood Industries, Inc., Wayne, Mich.; E. B. Hill, general sales manager; R. F. Whitworth, general service manager; Ross Miller, regional manager of the newly created Western Region sales office; A. C. Berg, regional manager of the Central Region; W. G. Barrett, regional manager of the Northeast Region, and H. C. Hatch, regional manager of the Southeast Region.

Concurrent with the establishment of regional offices, Gar Wood has consolidated its operations into three basic divisions. The Findlay Division in Findlay, Ohio, will assume the manufacture and distribution of Gar Wood tractor equipment, scrapers, bulldozers, and rippers, as well as Buckeye construction machinery (shovels, ditchers, finegraders, spreaders); the Wayne Division, Wayne, Mich., Gar Wood hoists, bodies, winches, cranes, and tanks; the St. Paul Division, St. Paul hoists, bodies, and truck patrols.

LECTUMEN★



PIPE LINING

for

WATER MAINS

3″ to 24″ I. D.

Quickly and Economically applied by

PITTSBURGH-ERIC PROCESS

The outstanding success of LECTUMEN as a trouble-proof lining for small water mains results from its high resistance to the corrosive action of soft or agressive waters. Applied electrolytically, after the pipe has been CLEANED DOWN TO THE METAL, LECTUMEN not only protects the main from underlying deterioration, but also effectively retards tuberculation and deposition. Fullest capacity and many additional years of useful service can thus be obtained from small mains that have been cleaned and lined with LECTUMEN by Pittsburgh-Eric Process. We will gladly make a survey and suggest a pipe reconditioning program to meet the requirements of your community.

Samples of pipe before and after cleaning and lining by Pittsburgh-Eric Process for a Southern water company.

LOW OVER-ALL COST

Makes Possible A Complete Rehabilitation Program For Municipal Water Systems.

Learn how small water mains can be reconditioned and restored to full efficiency at a fraction of the cost of replacement! Get the full details from our nearest branch TODAY!

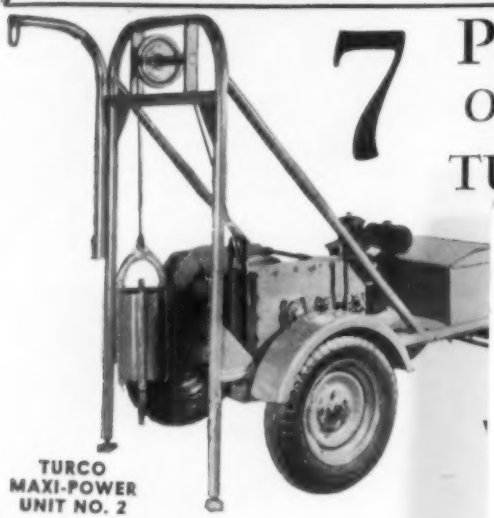
PITTSBURGH PIPE CLEANER COMPANY

133 Dahlem St., Pittsburgh 6, Pa.

PHILADELPHIA • BALTIMORE • WASHINGTON • NEW YORK • BUFFALO • CHICAGO
CINCINNATI • ST. LOUIS • DETROIT • BOSTON • BIRMINGHAM • HOUSTON • BRADENTON, FLA.

Modernize—Powerize—Economize!

7 Power Sewer Cleaning Units
Offered by
TURBINE



TURCO
MAXI-POWER
UNIT NO. 2

Models
VF3—Water-Cooled
ZF3—Air-Cooled

EXCLUSIVE FEATURES

1.	Tubular frame	6.	3-spee
2.	Forged, inclosed gearing	7.	High-s
3.	One clutch	8.	No-clu
4.	Flange ball-bearings	9.	Select
5.	Designed level wind	10.	Bucke

TIGH

BOU

Los Angeles I

Los Angeles has long been quoted for its attention to traffic and parking ills. For several years, monthly bulletins were issued by the Police Department, giving comparative statistics, warnings, advice, and often a haunting verse that pointed some common human car-behavior defect. Particularly thorough has been the study given to those sore spots, intersections. Los Angeles pioneered in the installation of sodium-vapor lamps at hazardous intersections. Another intersection improvement extending into the residential districts was comprehensive guide markings of the pavements.

The importance of making intersections safe can hardly be overstressed. Los Angeles' 5,000 miles of streets cross each other to form upwards of 30,000 intersections. Before the war, comparatively few accidents occurred from midnight to early daylight; many are now happening after midnight. During 1947, all traffic signals operated 24 hours a day instead of the former 16 hours.

Because of the extra rigors of constant operation, an investigation was made in 1946 concerning incandescent lamps suitable for traffic signals. A high-duty 60-watt lamp was selected that had a good record for on-and-off burning and vehicle vibration. This lamp is the 4,000-hour lamp made by the Du
gen, N
The
regula
other
Boulevard. A total of 935 were installed,
and in nine months, to June 30, 1946, 49 of these lamps burned out. Replacements, therefore, amounted to 7.7%.

William Linton, traffic signal electrician of Los Angeles, is replacing a burned- out lamp. Lamp replacements can take 90% of a maintenance man's time.

At the same time, 60-watt Duro Test lamps were installed diagonally to each other at these same intersections. Of the 702 lamps required, only 26, or 3.7%, burned out.

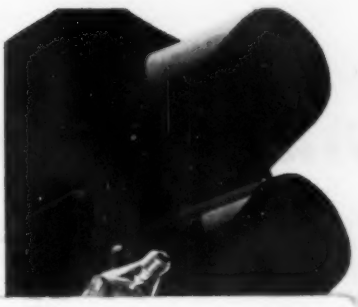
Comparison of the service failures of
has been replacing burned-out lamps. With fewer burnouts, there have been fewer accidents, with a consequent saving of life and property. Along with this innovation, enforcement was stiffened, and the most modern lighting was installed at the intersections. The trend in traffic deaths was reversed. Total fatalities dropped about 16% for the city and 17% downtown.

R. T. DORSEY, *Principal Engineer*
Street Traffic Engineering Bureau
Los Angeles, Calif.

Hoffman New Comptroller For A. G. Schoonmaker

Arthur F. Hoffman has been appointed comptroller of the A. G. Schoonmaker Co., Inc., 50 Church St., New York 7, N. Y., power machinery firm. Mr. Hoffman has been associated with the Electric Bond & Share Company and its subsidiary, Electric Power & Light Corporation, and with the United Gas Corporation, which is a subsidiary of Electric Power & Light.

hecking Scales in Ohio
With a Mobile Unit



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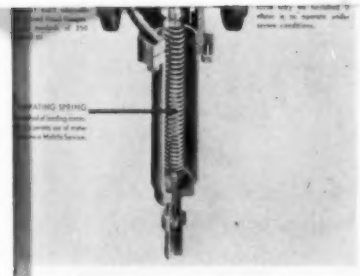

The manufacture of a new area me-
, designed with a sensitivity aimed
small flows and changes in rate of
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The Bailey area meter consists es-
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an electronic-type receiver which
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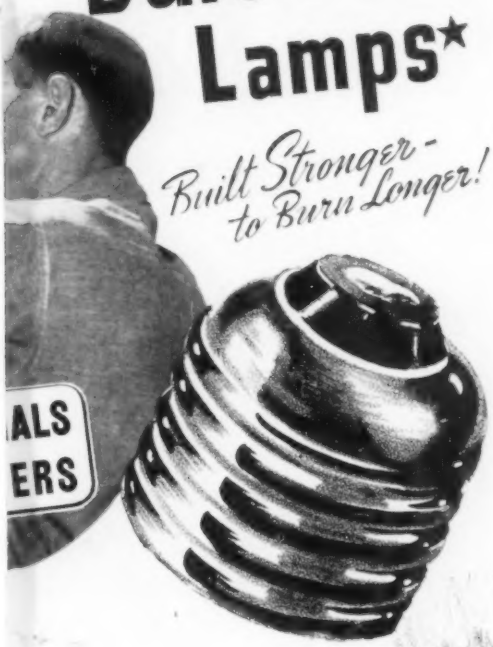
Los Angeles chooses Duro Test Lamps*

Built Stronger - to Burn Longer!



FEWER ACCIDENTS — By reducing dangerous interruptions in traffic signal operation, Duro Test 4,000-hour Lamps constitute a definite factor in the declining accident rate reported by the City of Los Angeles for the first seven months of 1947.

REDUCED MAINTENANCE — In carefully recorded tests Duro Test Lamps required less than half the number of replacements of ordinary lamps. In terms of man hours and automotive equipment, the figure is impressive — in terms of greater public safety it is a sweeping recommendation for Duro Test — America's sturdiest traffic lamp!

GREATER ECONOMY — Actual savings in dollars and cents were clearly demonstrated in above tests. (On police radio towers, requiring steeplejack service for lamp replacements, Duro Test Lamps made possible a budget reduction of over 50%). Rated at 4,000 hours, they are fully backed by Duro Test's one-year free replacement policy. Our specially trained representative in your city will be glad to give you a demonstration. Write to:

DURO TEST CORPORATION
NORTH BERGEN, N. J.

Modernize — Powerize — Economize!

TURCO MAXI-POWER UNIT NO. 2

Models
VF3—Water-Cooled
ZF3—Air-Cooled

7 Power Sewer Cleaning Units
Offered by
TURBINE

Write for this catalog and get Maxi-Power specifications.

COMPLETE SEWER CLEANING EQUIPMENT

TURBINE SEWER MACHINE CO.
5210 W. STATE STREET
MILWAUKEE, WIS. U.S.A.

EXCLUSIVE FEATURES:

1. Tubular frame
2. Forged, inclosed gearing
3. One clutch
4. Flange ball-bearings
5. Designed level wind
6. 3-speed transmission
7. High-speed chain drive
8. No-clutch free spooling
9. Selected speeds
10. Bucket swing positioner

Los Angeles Installs More Durable Traffic Lamps

Los Angeles has long been quoted for its attention to traffic and parking ills. For several years, monthly bulletins were issued by the Police Department, giving comparative statistics, warnings, advice, and often a haunting verse that pointed some common human car-behavior defect. Particularly thorough has been the study given to those sore spots, intersections. Los Angeles pioneered in the installation of sodium-vapor lamps at hazardous intersections. Another intersection improvement extending into the residential districts was comprehensive guide markings of the pavements.

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Because of the extra rigors of constant operation, an investigation was made in 1946 concerning incandescent lamps suitable for traffic signals. A high-duty 60-watt lamp was selected that had a good record for on-and-off burning and vehicle vibration. This lamp is the 4,000-hour lamp made by the Duro Test Corporation, North Bergen, N. J.

The first step in the test was to install regular 67-watt lamps diagonal to each other at 56 intersections on Wilshire Boulevard. A total of 633 were installed, and in nine months, to June 30, 1946, 49 of these lamps burned out. Replacements, therefore, amounted to 7.7%.

William Linton, traffic signal electrician of Los Angeles, is replacing a burned- out lamp. Lamp replacements can take 90% of a maintenance man's time.

At the same time, 60-watt Duro Test lamps were installed diagonally to each other at these same intersections. Of the 702 lamps required, only 26, or 3.7%, burned out.

Comparison of the service failures of the regular and the Duro Test lamps shows a life expectancy favorable to the latter of 52%.

With these lamps, there are fewer replacements by one-half—and 90% of a traffic-signal maintenance man's work has been replacing burned-out lamps. With fewer burnouts, there have been fewer accidents, with a consequent saving of life and property. Along with this innovation, enforcement was stiffened, and the most modern lighting was installed at the intersections. The trend in traffic deaths was reversed. Total fatalities dropped about 16% for the city and 17% downtown.

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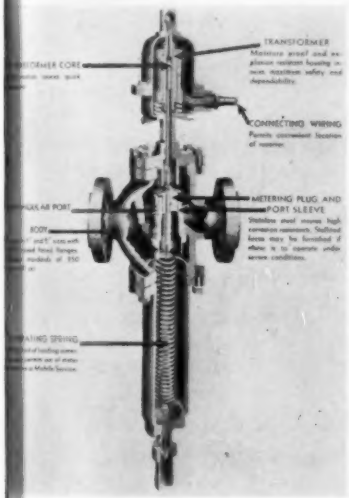
Checking Scales in Ohio With a Mobile Unit

The interior of the Autocar, which carries a complete line of equipment for verifying the accuracy of scales.

A mobile unit manufactured by The Autocar Co., 785 Seventh St., Ardmore, Pa., is covering the state of Ohio under the supervision of the Division of Weights and Measures of the Ohio Department of Agriculture in the department's program of establishing uniform weights throughout the state.

Housed within the C-70 Autocar are the 1,000-pound weights, a hoist, a utility for moving the weights, and other equipment.

A New Area Meter for Water, Sewage Measurements



The manufacture of a new area meter, designed with a sensitivity aimed at small flows and changes in rate of flow, has been announced by the Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio. The meter will find special use in water and sewage-treatment plants when measuring flow of chemicals solutions, and in power plants in measuring fuel-oil consumption.

The Bailey area meter consists essentially of a transmitter which is installed in the pipe line like a valve, and an electronic-type receiver which may be situated at virtually any distance from the transmitter.

Los Angeles chooses Duro Test Lamps*
Built Stronger - to Burn Longer!
FOR TRAFFIC SIGNALS AND RADIO TOWERS
FEWER ACCIDENTS — By reducing dangerous interruptions in traffic signal operation, Duro Test 4,000-hour Lamps constitute a definite factor in the declining accident rate reported by the City of Los Angeles for the first seven months of 1947.
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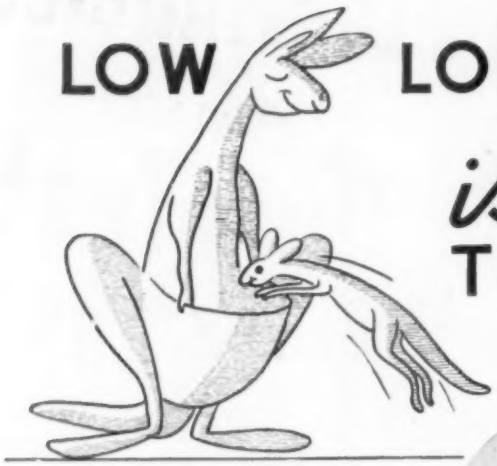
DURO TEST CORPORATION
NORTH BERGEN, N. J.

LOW LOADING HEIGHT *is important* TO YOU TOO!



— important because it can mean a big difference in the cost of your refuse collection.

The hip-high loading level of the LEACH REFUSE-GETTER requires the minimum of lifting by the operator.

Less fatigue means greater efficiency.

Strains and injuries due to lifting shoulder high or higher are costly items. The short lift to load the LEACH bucket eliminates these dangers.

Time and energy saved in loading can be used for making more collections.

Reduce your operating costs and speed up your refuse collection with the LEACH REFUSE-GETTER.

LEACH COMPANY Established 1887 **OSHKOSH, WISCONSIN**

Caterpillar Appointments

Kenneth F. Ames, General Sales Department member, Russel S. Cornell, and Truman E. Sage district sales representatives of the Caterpillar Tractor Co., Peoria 8, Ill., have been appointed assistant sales managers of the Central, Eastern, and Western Sales Divisions, respectively.

The appointments, announced by Henry H. Howard, expand the organi-

Truman E. Sage

Russell S. Cornell

Kenneth F. Ames

zation of the General Sales Department to include two assistant sales managers in each of the geographical sales divisions. Ames and Cornell will make their headquarters at the Peoria plant, and Sage will be stationed at the San Leandro, California, plant.

Sweeney Bros. Appointed Koehring Distributors

The Koehring Co., Milwaukee 10, Wis., has appointed the Sweeney Brothers Tractor Co. of Fargo, N. D., as distributor in South Dakota for Koehring products and the products of Koehring's subsidiaries, The Kwik-Mix Co., Port Washington, Wis., and the Parsons Co., Newton, Iowa.

Self-Wiping, Reflecting Stud For Center of Highways

Catseyes, the trade name given the English invention of a self-wiping reflecting roadstud, are now being marketed exclusively in eastern and southern United States by the Highway Safety Co., Inc., Hamilton Ave., Frederick, Md.

Each Catseye has two reflecting lenses housed in a highly resilient bridge-shaped rubber pad which clips into a box-shaped metal base provided with ramps to protect the pad. The pads are designed so that they are depressed by traffic passing over them. As they are depressed, the reflecting lenses come in contact with stationary wipers and are cleaned of dirt and mud. The metal-based box is paved in the center of the highway so that the light of automobiles' headlamps are reflected from the Catseyes, marking a definitely lighted center line for traffic.

The Catseyes, set in the center of the paving, form a distinct center-line guide for the motorist.

Catseyes reflect red on curves and over brows of hills or other danger zones, and white on straightaways. The white Catseyes may replace the white line in the center of the highway. Even in heavy fog, there is from 50 to 100 yards' visibility provided, as well as indicating danger zones to the motorist.

The life of the rubber pad in each unit is 7 to 8 years; replacement costs a few cents. The lenses and rubber pad are protected against damage from snowplows and heavy truck traffic by the ramps.

Unusual Opportunity

for

DISTRIBUTORS
MANUFACTURERS' AGENTS
SALESMEN

Experienced in selling to municipalities

Expansion plans and steady growth of an established, highly successful, nationally-known manufacturer have made it possible to offer

A Highly Attractive and Profitable Connection

Choice territories now open. Get the details about this liberal, exclusive, franchise-protected proposition.

WRITE! **Give full information about experience, connections, type of equipment represented. Only experienced salesmen or organizations will be considered.**

This is an exceptional offer from a responsible manufacturer with a soundly established reputation. Commissions will be in the five-figure bracket.

Negotiations kept in strict confidence. Company representatives, executives and associates know about this advertisement.

Don't Delay! Write, today, to

BOX NO. 274
care THE AMERICAN CITY MAGAZINE
470 Fourth Ave., New York 16, N. Y.

All Around The Town...They're Demanding

REEVES ARMY TWILL

Look for this Label in Your Uniforms, Utility and Work Clothes!

YOUR uniformed personnel look better, feel better and work better with clothing made of durable, smart looking Reeves Army Twill. Its high tensile strength assures rugged wearability with long-lasting economy. Vat dyed colors are fast to sun, water and perspiration. Sanforized Shrunk*, Reeves Army Twill retains smart tailoring after repeated washings. Remember—over 90 million yards of this same fabric helped equip America's fighting men—exceeding Government specifications under the toughest climatic conditions.

• • •

Write for names of manufacturers specializing in uniforms and work clothes for your industry.

**Residual shrinkage less than 1%.*

"FROM COTTON TO CUTTER"

SPINNING WEAVING DYEING FINISHING Reeves FABRICS

THE REEVES FABRIC GROUP INCLUDES:

Reeves Army Twill • Reeveking Gabardine
Glengarrie Poplin • Marine Herringbone
Byrd Cloth • Warrior Twill • Mountain Cloth
Pima King Broadcloth • Reevecord

MADE OF FINE COTTONS

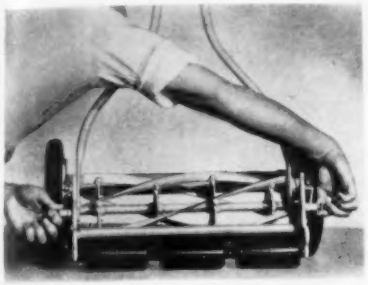
REEVES BROTHERS, INC.

54 WORTH STREET, NEW YORK 13, N. Y.

REPRESENTATIVES IN: *Akron • Atlanta • Boston • Chicago • Dallas • Los Angeles • Philadelphia • Portland, Ore. • St. Louis • Montreal • Toronto*

Cutting-Height Adjustment Simplified on Power Mower

The Model E-17 lawnmower manufactured by Clemson Bros., Inc., Middletown, N. Y., is an exceptionally rigid lawnmower that weighs 29 pounds and cuts a full 17-inch swath. Features include a simplified cutting-height adjustment that permits the blade to be adjusted without tools to cut from ¼



By pulling out the two spring pins and letting them snap back into place in any of the twelve holes in the roller frame, the operator adjusts the cutting height.

to 2 inches; a large-diameter roller which is in three sections, so that turning may be accomplished without scuffing the sod; a handle suspension that eliminates bobbing on bumpy ground, and close-coupled design that permits mowing close to obstructions and consequent reduction of hand cutting.

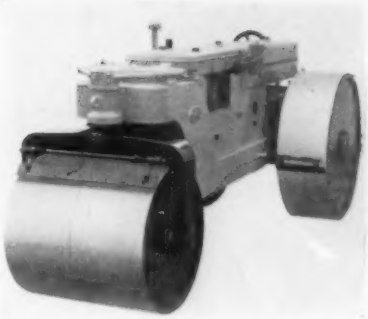
Great American Industries Sells Ward LaFrance Truck Div.

Great American Industries, Inc., 230 Park Ave., New York 17, N. Y., has sold its Ward LaFrance Truck Division to Ward LaFrance Truck Corp., which is controlled by Joseph G. Grossman and will be operated by him and Mr. A. Ward LaFrance. Mr. LaFrance and Mr. Grossman will continue the production of heavy-duty trucks, fire engines, and trolley coaches, at the Elmira plant at Elmira, N. Y., and the factory branch in the Bronx.

New Road Rollers Have Easy-Handling Features

The Tampo Mfg. Co., 1146 W. Laurel St., San Antonio 6, Texas, is manufacturing new models of three-wheeled rollers. They are 8-to-10- and 10-to-12-ton variable-weight machines, with 5 forward and 5 reverse speeds traveling at 1½, 2½, 3½, 5, and 10 mph. Smooth operation is possible, since on these machines it is not necessary to shift gears each time the direction of travel is reversed; only one lever has to be moved.

Tampo rollers are equipped with fabricated wheels that are hollow and may be filled with water or other liquids to increase the ground pressure. As a result, the ground pressures may be varied to suit individual base and surface materials.



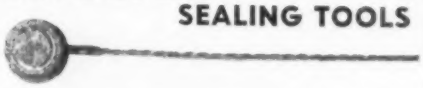
One of the new three-wheeled roller models being manufactured by the Tampo Manufacturing Company.

Robinson to Sell Bond-O

Northrop & Co., Inc., Spring Valley, N. Y., has appointed James M. Robinson to handle the sale of Bond-O in New York State, northern New Jersey, and northeastern Pennsylvania. For the past two years, Mr. Robinson has represented the Rensselaer Valve Company of Troy, N. Y., and he will continue to sell their line of fire hydrants and gate valves.

Reg. U. S. Pat.-Off.
SEALS OF MERIT—for EVERY PURPOSE

WIRE SEALS and SEALING TOOLS



Above: seal for parking meter coin containers, water, gas and electric meters. Also padlock and coin bag seals and sealing tools. Wire lengths as required.

Above: self-locking car seals for automatic voting machines, water and steam valves—no sealing tool required; actual size ⅜" x 8½".

Write for samples, literature and quotations

E. J. BROOKS COMPANY 169 North 13th Street Newark 7, New Jersey

1873—*Serving Industry 75 Years*—1948

From

THE ANDERSON HERALD

Anderson, Indiana, September 30, 1947

"CITY WATER

"This week, the city administration is giving the public an opportunity of visiting the city water plant to examine the water coming from the two sources—White River as we have had it for years and the Killbuck Basin which has been introduced in the last sixty days. It will be a revelation.

"The water that we have been using for years from White River is a pretty sordid mess. It comes to us from Muncie and the other towns and cities to the northeast. And as it passes through them, it is loaded with filth that cannot be removed by the natural processes of the stream. Consequently, city chemists here must take this water and chemically purify it before it enters the mains. This means introducing heavy quantities of chemicals which affect the taste of the water. Incidentally, the cost of these chemicals runs into the tens of thousands of dollars each year.

"The water we are now using in the mains is from the Killbuck Basin. This water was provided by the Ranney system, bargained for by the administration on a basis where it will cost the users no more money yet they will get a superior brand of water and eventually own the system themselves. This clear water, unaffected by the refuse of many cities and towns, is further purified in the gravel and sand of the Killbuck basin north of town. When it comes into the water plant it is practically pure so that little must be done to it to send it to customers. It is softer water, too, which means that you use less soap to make suds for washing."

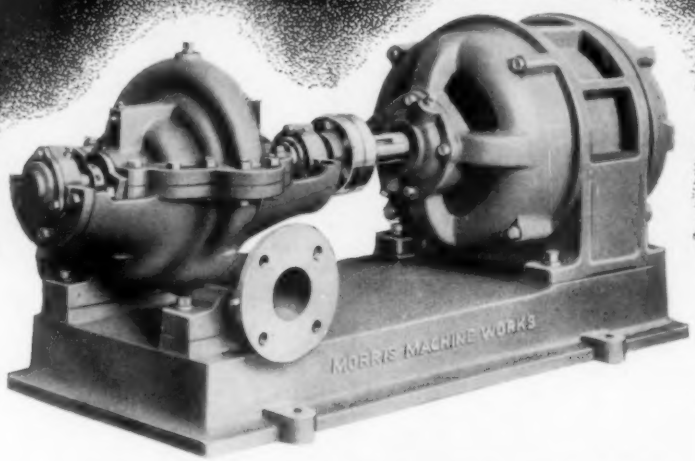
RANNEY METHOD WATER SUPPLIES, INC.

63 S. High St., Columbus, Ohio

WATER SUPPLY ENGINEERS AND CONTRACTORS

FLOATING SEALING RINGS...

Permit Closer Running Clearances...



MORRIS Horizontally Split Double-Suction WATER PUMP

No other pump has the Floating Sealing Rings . . . yet this exclusive feature alone makes the Morris Double-Suction Water Pump outstanding for efficiency and long service.

During the instant that the pump comes up to speed, but before full pressure is built up, the Morris Floating Sealing Rings adjust themselves to a uniformly close running clearance around the impeller. As soon as full speed is developed the internal hydraulic pressure acting upon the vertical face of the floating ring presses it tightly against the precision machined surface of the casing ring where it is firmly held in place.

This action permits machining the Rings to closer clearances. Leakage is consequently reduced to a minimum, initial efficiency maintained for much longer periods of service. Assures concentricity of ring with impeller, and eliminates binding due to abnormal operating conditions.

Other Long-Service Features of the Morris...

- **Heavy duty, precision-made ball bearings mounted in dust and moisture-proof housings.**
- **Extra-heavy shaft of tough, hard alloy steel . . . exceptionally large in diameter . . . to prevent destructive whipping.**
- **Casing is horizontally split. Upper part easily removed for inspection and servicing without disturbing suction and discharge piping.**

Advanced design of Morris Double-Suction Water Pumps and their several exclusive features assure increased hydraulic and mechanical efficiency . . . reliability . . . and low maintenance cost. Write today for free Bulletin 179.

MORRIS Centrifugal Pumps

MORRIS MACHINE WORKS, Baldwinsville, N.Y.

Sales Offices in Principal Cities

Traffic Service For the Smaller City

Since municipal studies have shown that America has a great number of medium-sized municipalities with traffic and planning problems and no personnel to solve them, Leslie Williams and Charles M. Upham, Jr., chairman and secretary, respectively, of the American Road Builders' Association Committee on Highway Terminals, and principal members of a new firm of consultants, have innovated a traffic advisory service.

The over-all plan is to offer a sustained advisory service to communities on traffic and city-planning problems, accidents and congestion, parking, mass transportation, highway terminals, airports, parks, housing, zoning, and public utilities.

Williams and Upham contemplate establishing offices throughout the United States, with headquarters in New York City at 292 Madison Ave. A branch office has been set up in Hartford, Conn., to serve the New England area.

Mack Appoints Representative For Fire Engine Division

Sanford Herberg has been appointed a representative of the Fire Engine Division of the Mack Mfg. Corp., Empire State Bldg., New York, N. Y.

Sanford Herberg

Mr. Herberg has been in charge of the Municipal Fire Protection Dept. of the Fire Underwriters Inspection Bureau for the past fourteen years. He will be associated in his new position with W. B. Moore of Mack's Chicago Division; his office will be located at 2505 University Ave., St. Paul, Minn.

Remarkable Speed Attained By New Velocity Power Driver

The Model "B" Velocity Power Driver, manufactured by the Mine Safety Appliances Co., Pittsburgh, Pa., anchors pipe hangers and conduit boxes to structural plate or concrete in less than 20 seconds. Threaded or headed studs, driven instantaneously, perform these and scores of formerly time-consuming tasks in a matter of seconds. Heating and ventilating ducts; gas, water, fuel, and sprinkler lines; signs and guard rails—all are within the scope of the utility of this tool.

Although the driver itself weighs only 4½ pounds, the studs imbedded by the tool withstand tensions of thousands of pounds. Since it is completely self-contained, the tool may be operated in any position or location, entirely independent of trailing cables, hoses, or outside sources of power. Power for the Model "B" is supplied in a small blank cartridge.

The Mine Safety Appliances' Model "B" Velocity Power Driver.

Bailey Opens Branch Offices

The Bailey Meter Co., Cleveland, Ohio, has opened three branch offices: 2176 Esplanade Ave., New Orleans, La., under the supervision of S. G. Dukelow; 207 State St., Schenectady, N. Y., with J. F. Luhrs as the branch manager, and as manager of its St. Louis, Mo., branch office, located at 4030 Chouteau Ave., the company recently appointed G. R. Mays.

SPARLING MAIN-LINE METERS

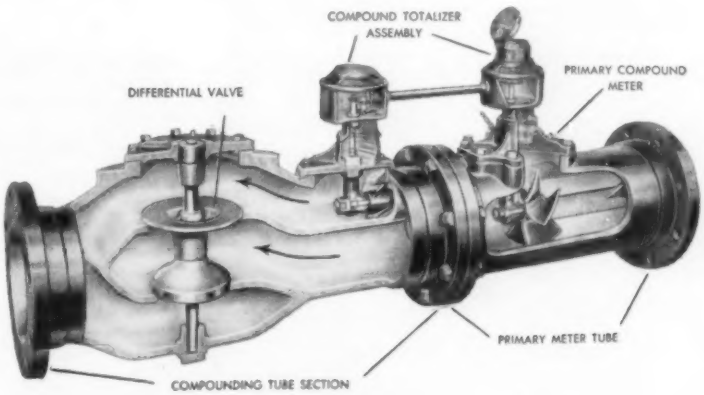
for Consistent Accuracy

The COMPOUND

for Flow Ranges as Wide as 1 to 125

SIZES 6-Inch to 36-Inch

If, for example, in a 6-inch line, flows very seldom go below 90 g.p.m., the standard Sparling Meter is the buy for you, especially if no chemical feeds are to be controlled on the lower flows. But if flows range from 15 to 1000 g.p.m., consider the Compound. The single totalizer gives you an accurate picture all the way—no sharp cut-over point. Pressure loss is negligible. It may well be your best buy!



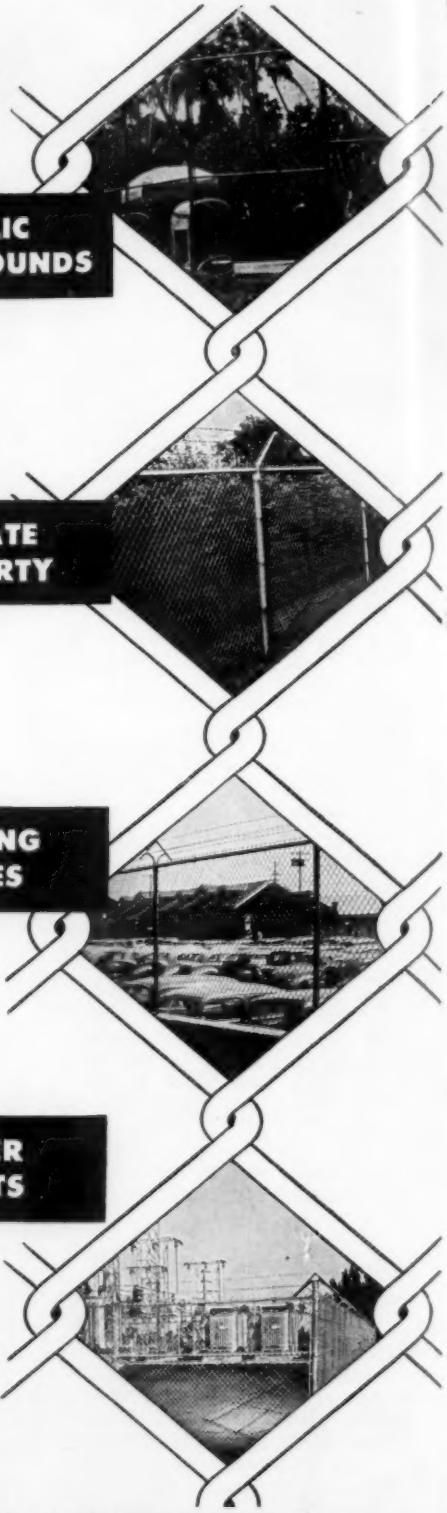
For sizes, flow-ranges, low pressure losses and prices, ask for Bulletin 310

R. W. SPARLING Manufacturers of WATER MEASURING EQUIPMENT

LOS ANGELES 54.....Box 3277 Terminal Annex
CHICAGO 16.....3104 South Michigan Ave.
622 Broadway.....CINCINNATI 3
101 Park Avenue.....NEW YORK 17
BOSTON 8 .....6 Beacon Street

Realock Fence

PROVIDES DEPENDABLE PROTECTION FOR . . . .



For any type of real property requiring protection against arson, theft, trespassing or vandalism, a tamper-proof Realock* Fence provides the necessary security—plus many other advantages.

Realock Fence is easy to install, moderate in cost and virtually maintenance-free. A top finish of four point barbed wire is suggested for greatest protection. For schools, playgrounds, homes and gardens, a smooth knuckled selvage (with ends bent back along the weave) insures a satisfactory enclosure.

Only the finest selected materials are used in making Realock Fence—which is further protected by hot galvanizing. Fittings are of malleable iron and pressed steel, heavily galvanized, or aluminum.

FREE CATALOG—FREE ESTIMATES

Without obligation, we will be happy to have the Realock representative in your territory measure your property, work out details for proper protection and submit estimates for fence material ready for erection or covering complete installation by trained crews. For free catalog and further particulars, write to our nearest office.

*Realock is a trade mark identifying the Chain Link Fence made by The Colorado Fuel and Iron Corp. and subsidiaries.

REALOCK FENCE

Wickwire Spencer Steel Division
361 Delaware Avenue
Buffalo 2, N. Y.

The Colorado Fuel and Iron Corp.
Continental Oil Bldg.
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The California Wire Cloth Corp.
1001 22nd Avenue
Oakland 6, Calif.

CF&I Realock Fence

Branches and Distributors in Principal Cities Everywhere

Dresser Appointment, Earnings

The Dresser Mfg. Div., Dresser Industries, Inc., Bradford, Pa., has appointed W. LeRoy Shelgren as Appalachian district manager, to succeed Charles J. Gregg.

W. LeRoy Shelgren

Mr. Shelgren, who started with Dresser 23 years ago, will have the territory including western Pennsylvania, western New York, West Virginia, and Michigan.

H. N. Mallon, Dresser's president, has announced that the net earnings for the fiscal year ended October 31, 1947, amounted to $4,439,189 on net sales of $80,095,199, compared to net earnings of $1,037,235 on net sales of $54,783,188 in the previous fiscal year. This is equivalent to $3.85 per share on the 1,095,137 shares of common stock outstanding. Seventy-four cents per share was the return the year before.

Chemical Solution Feeders For Water and Sewage Plants

The Infilco COE chemical solution feeder, for use in the measurement of coagulating chemicals in the treatment of water and sewage wastes, measures clear chemical solutions by automatically controlling the flow from a supply tank to obtain a constant-rate discharge through an orifice operating under a fixed head. Means are included for manual variation of the rate of feed by change of the orifice area and/or the head over the orifice, as well as means to maintain, interrupt, or terminate the flow through the orifice with an electrically operated device.

Remote control of the feeder discharge may be accomplished with an electric push-button control to make or break the circuit to the motor-operated device. Making the circuit causes the motor to uncover the orifice, and the feeder then discharges at a constant rate until the circuit is broken, when the motor returns to cover the orifice. Another method is to connect the motor to the motor circuit of a pump handling the liquid to which the chemical is fed. In that case it is immediately de-energized, and the feeder discharge is cut off when the current supplying the pump motor fails for any reason. As a result there can be no waste of chemical or overtreatment.

The COE chemical solution feeder is manufacturer by Infilco, Inc., Chicago, Illinois.

Pennsalt Personnel Changes

Joseph J. Duffy, Jr., manager of sales of the Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa., has announced three sales personnel changes in the Special Chemicals Division.

Albert H. Clem has been appointed to the newly created position of field sales supervisor; his position will entail the supervision of activities of the district sales managers and all field men of the division.

Succeeding Mr. Clem as product supervisor of cleaners and pickling and descaling products is Philip C. Staples, Jr. And taking over Mr. Staples' previous position of product supervisor of corrosion-resistant products will be Robert R. Pierce.

CUT TALL GRASS... WEEDS...BRUSH
Faster and Easier

Ideal for water works, sewage plants, parks, playgrounds, airports, roadsides, vacant lots, tourist camps. Mows fast and clean around buildings, trees, and fences.

Very easy to handle on rough ground, steep slopes or hard to reach places. Cuts 1½" from ground. Does work of 8 men.

EASY TO LOAD

Light weight of JARI makes it easy for one man to load into truck or car trunk for quick moving. Rugged. Dependable.

WRITE TODAY FOR *FREE* FOLDER

JARI PRODUCTS, Inc.
2934-G Pillsbury Ave.
MINNEAPOLIS 8, MINNESOTA

Three Key Appointments At Vapor Recovery Systems

L. S. Curfew has been appointed executive vice-president; Joseph F. Lee, general manager, and George F. Denny, chief engineer of The Vapor Recovery Systems Co., 2820 N. Alameda St., Compton, Calif.

Mr. Curfew has been with the company since 1928, when it was founded. Formerly the chief engineer, Mr. Lee was previously associated with the California Shipbuilding Corp. and with the Bureau of Engineering of the U. S. Navy. Mr. Denny also was with the California Shipbuilding Corp. during the war.

WITH CONSISTENT ACCURACY
The Globe
GEOPHONE
locates leaks without digging!

The Globe Geophone, a device operating on the principles of seismograph and stethoscope, far surpasses any instrument ever designed for underground leak locating. When within 50 or 75 feet of a steam or water leak, the Geophone picks up the sound and within a few minutes locates the exact spot. Water departments and industrial plants using the Geophone save both time and unnecessary expense of excavations. The Geophone is also used with spectacular results in the mining, oil and termite fields.

The Geophone consists of two discs, tubes and headpiece. Outfit packed in leather covered carrying case. Handy shoulder strap.

$85

Pipe Finders $110
Dipping Needles $20
Pipe Phone $3.70

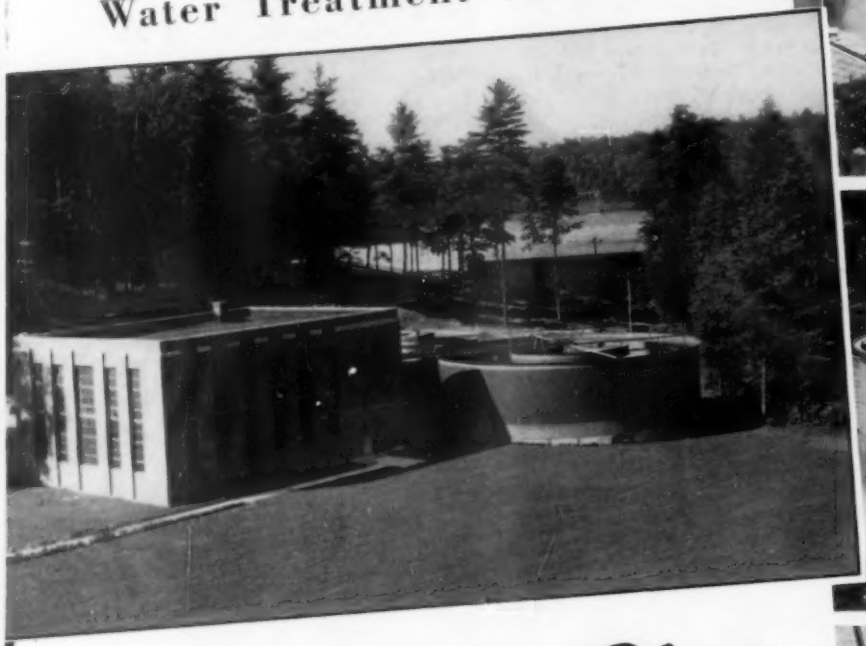
Globe Phone Mfg. Corp.
(Manufacturers of Geophones Since 1918)
READING, MASS., DEPT. Y

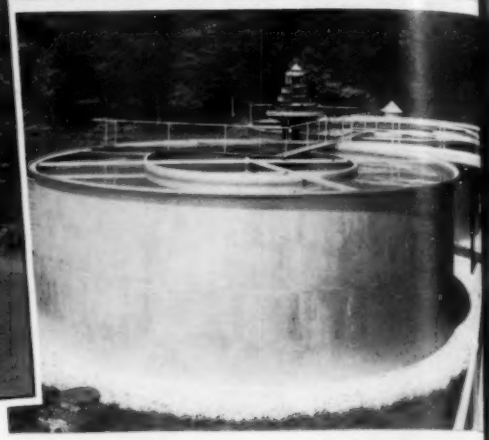
Please send me further information on items checked below:

☐ Geophone ☐ Pipe Finders
☐ Pipe Phones ☐ Dipping Needles

NAME .....
FIRM .....
ADDRESS .....

A permanent investment in efficient, economical Water Treatment Facilities





Steel Filtration Plants
by
Pittsburgh-Des Moines

The permanence of steel, employed for all water-handling equipment from intake point to elevated storage tanks, reservoirs or standpipes, is a modern advantage provided by Pittsburgh-Des Moines Filtration Plant design and fabrication.

We will be glad to consult with you on your water treatment project, and show you in detail the many features contributing to better performance and economy in P-DM Steel Filtration Plants. Write today, without obligation.

PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH.....3412 Neville Island
NEW YORK.....Room 915, 270 Broadway
CHICAGO.....1216 First National Bank Building
DES MOINES.....913 Tuttle Street
DALLAS.....1217 Praetorian Building
SEATTLE.....520 First Avenue, South
SANTA CLARA, CAL.....619 Alviso Road

De Laval Appoints Neumann

W. A. Neumann Jr. has been appointed factory controller, assistant treasurer, and assistant secretary of the De Laval Steam Turbine Co., Trenton, N. J., succeeding C. Kushell, Jr., who has resigned.

W. A. Neumann

Prior to his association with De Laval, Mr. Neumann was with the Westinghouse Electric Corp., serving in accounting and administrative capacities. He was with Westinghouse from 1937 to 1946.

Fox Forms Own Company

Robert H. Fox, who has been with Six Wheels, Inc., for the past seven years in the capacity of sales engineer, has now formed his own company, to be known as the Robert H. Fox Co., 14730 Vanowen Blvd., Van Nuys, Calif.

Robert H. Fox

The company will specialize in the engineering and sales of special off-the-highway trucks, cranes, and shovels.

Rhodemaster Parking Meter

Features of the new Rhodemaster parking meter, now in production, include a self-closing coin slot which provides protection against all weather conditions; a magnifying reinforced coin window which facilitates detection of nickel slugs, and a sealed coin box for money protection. The meter is manufactured for either single-penny or nickel use or may be supplied for penny-nickel combinations. Timers requiring repair can be returned to the factory in a carton, eliminating the necessity for skilled clock repairmen. Installations of the Rhodemaster have been made in many cities, including Camden, Passaic, and East Orange, N. J.; Erie, Pa.; Auburn, Maine; Faribault, Minn.; New Smyrna, Fla.; Elizabeth, N. C.; Waycross, Ga., and Nacogdoches, Tex.

The Rhodemaster is manufactured by M. H. Rhodes, Inc., Hartford, Conn.

Keating Announces 257,073 Trucks

Analysis of final year-end reports on Chevrolet trucks show 1947's volume of 257,073 shattered all previous marks for domestic sales, T. H. Keating, general sales manager of the Chevrolet Motor Division, General Motors Bldg., Detroit 2, Mich., announced.

Only 1941 operations approached last year's rate, Keating pointed out; domestic sales in 1941 totaled 228,341.

The 1947 record was climaxed by three consecutive monthly highs with November beating October and December in turn pushing to an all-time level the company's monthly peak.

A MIGHTY EXPENSIVE PIECE OF PIPE

in any water system

This piece of clogged pipe, taken from a water main, was the cause of high pumping costs, low pressures, and inadequate water supply.

Since 1906 National Water Main Cleaning Co. has corrected many serious pipeline conditions. These involved the removal of hard incrustation, serious tuberculation, obstructions, sediment and debris of all kinds in water mains of all types and sizes. Any main can be restored by National to at least 95% of its original capacity.

Cleaned by National

19

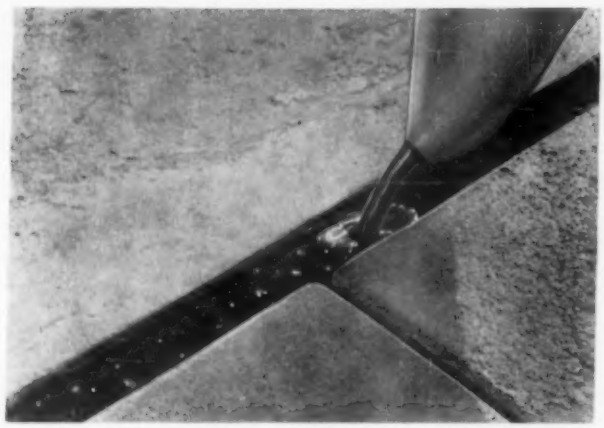
NATIONAL WATER MAIN CLEANING COMPANY

50 CHURCH STREET, NEW YORK 7, N. Y.

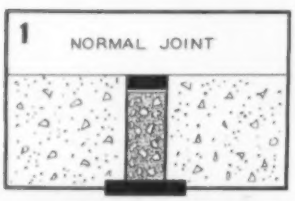
ATLANTA..1221 Mortgage Guarantee Bldg.
BOSTON.....115 Peterboro Street
CHICAGO.....205 West Wacker Drive
HOUSTON.....2518 Grant Street
KANSAS CITY.....421 B.M.A. Building
LOS ANGELES.....448 South Hill Street
MEMPHIS.....822 Dermon Building
OMAHA.....3812 Castellar Street
RICHMOND.....210 East Franklin Street
ST. LOUIS.....7103 Dale Avenue
SALT LAKE CITY..149-151 W. Second So. St.
SAN FRANCISCO.....681 Market Street
MONTREAL.....2028 Union Avenue
WACO.....P. O. Box 887
VANCOUVER, B. C.....505 W. 1st Ave.
WINNIPEG.....576 Wall Street
HAVANA • MAYAGUEZ, PUERTO RICO
BOGOTA • CARACAS • MEXICO CITY

Para-Plastic and KORK-PAK

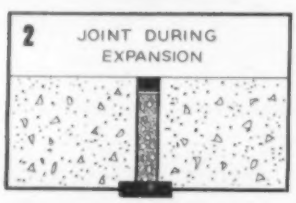
the ideal combination
for maximum seal protection in expansion joints



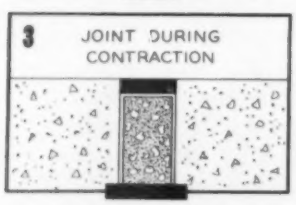
Hot Pouring Para-Plastic Over Kork-Pak Filler



KORK-PAK fills the joint fully at the time of insertion, and rests at the bottom on the premolded strip of Para-Plasic called Baseal. It is covered at the top with hot poured Para-Plastic.



During compression, as in periods of maximum concrete expansion, Kork-Pak will not extrude. It takes the full compression exerted in the normal joint and then recovers more than 80%.



During contraction, the higher resiliency of Kork-Pak permits a more complete filling of the joint than ordinary fibre materials, thus preventing large openings, between it and the concrete which could become filled with non-resilient materials and cause a blow-up.

Para-Plastic is a rubbery, resilient, adhesive plastic which will adhere to steel, metal, wood, tile, glass, concrete and all forms of masonry. It is co-hesive, as well as adhesive, and is therefore self-healing.

Para-Plastic will not become brittle or hard at low temperatures. It remains resilient, adhesive and effective at temperatures from zero to 140° F., and in this range will maintain a positive bond, a continuous seal.

Para-Plastic is now available in several colors in addition to black, which makes it possible to extend the application of this remarkable material to an almost unlimited number of uses, where black was not suitable. Colored Para-Plastic meets Federal Specification SSF-336.

KORK-PAK gives you 5 definite advantages.

1. **Kork-Pak** is more fully resilient. It has a greater recovery—between 80% and 90% as against 70% for ordinary fibre joints. The more fully the space below the seal is kept filled during contraction, the less danger exists of penetration of the seal by dirt, stones and other non-compressible material, which might cause a blow-up when expansion takes place.

Contractors will find that less sealing material in needed when **Kork-Pak** is used because it keeps the joint more nearly filled.

2. **Kork-Pak** handles without breaking.

3. **Kork-Pak** absorbs less water—only 8% by volume as against 15% for ordinary fibres.

4. **Kork-Pak** is non-extruding.

5. **Kork-Pak** has the desirable characteristics of the more expensive joints combined with low cost.

PARA-PLASTIC IS A ZERO-LASTIC PRODUCT

manufactured under rigid Zero-Lastic License quality control

PARA-PLASTIC is Available in Black and Colors

SERVICISED QUALITY PRODUCTS © 1930

SERVICISED PRODUCTS CORP.

6051 West 65th Street, Chicago 38, Ill.

All Sewer Cleaning Is Done by Crews Above Ground

This root, weighing 600 pounds, was removed from a sewer entirely by means of Flexible sewer rod equipment; all the work was done above ground, and powered machinery was not required.

With the mechanism manufactured by the Flexible Sewer-Rod Equipment Co., 9059 Venice Blvd., Los Angeles 34, Calif., all the work attached to cleaning sewers is done above ground, including the removal of roots.

Following the determination of the depth of the manhole by means of connecting length of 1½-inch pipe at the end of which is a bell, rods are pushed down inside the pipe and through to the horizontal sewer pipe below ground. The corkscrew attachments at the end of the connected rods is wound around the obstructions in the sewer pipe through the use of a reel and ratchet turning handles. Then by unreeling the length of rod, the obstruction is pulled to the surface, and the sewer pipe has been cleaned. In the same manner, by use of different end attachments substituting for the cork screw, sand and other obstructing materials can be removed, such as bottles and cans. Coiled rods may be obtained to work around traps four or more inches high.

Olson Appointed Assistant To Chicago Sales Manager

Alfred J. Olson has been appointed assistant sales manager of the Chicago plant of Joseph T. Ryerson & Son, Inc., 2558 West 16th St., Chicago, Ill., distributors of steel from stock. He succeeds Ray C. Page, who was recently named sales manager of the company's new steel service plant under construction in the San Francisco area.

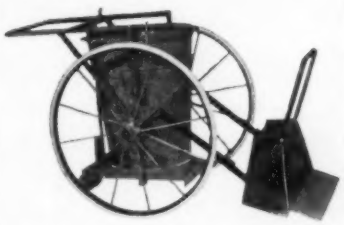
Alfred J. Olson

Mr. Olson became associated with Ryerson in 1923, progressing through various divisions of the company—advertising, claim, work order and inside sales—until his appointment in 1936 as sales representative in Illinois.

Commercial Lab Appointment

Dr. Harold M. Dudley has been appointed publicity relations counsel of the American Council of Commercial Laboratories.

TARCO'S



"Street Sweepers' Friend"

CAN CARRIERS

Are STRONGER-BUILT to LAST LONGER
FRAMES are single unit, all-welded.
WHEELS available with either rubber or steel tiring.
BEARINGS either roller or plain.
AXLES are rigidly braced for correct alignment.
CASTER wheels are full swivelling.
For one or two cans. With or without all-welded level lifting scoop.

Detailed Information FREE

TARRANT MFG. CO.
East Ave. Saratoga Spa, N. Y.

Hydraulic Sander Gives

√ Controlled Speed
√ Controlled Density
√ Controlled Direction

City, county and state highway departments use Hydro Spreaders because they provide the safe, sure way of sanding icy streets and roads. Easily installed on any dump truck with hydraulic hoist.

Material can be spread from 9 ft. to 35 ft. at speeds up to 30 m.p.h. All sprockets and chains are fully enclosed and material can be dumped over spreader without damage. One man can drive truck and operate spreader from cab.

An exclusive Hydro Spreader feature is the automatic gate opening device. When the driver starts the spreader the gates open and as the spreader is stopped the gates automatically close. **Immediate delivery.**

Write for illustrated folder
Some Distributor Territories Available

Hydro Spreader Corp.
247 Madison St. Waukesha, Wisc.
Phone: Waukesha 2040

You Can Have Control!

Mueller Gate Valves offer a low cost method of controlling water in a distribution system as they provide the means for a positive shut-off, are easily installed, and are adaptable to meet the demands of most operating conditions. They may have rising or non-rising stems, open either right or left, and due to their exclusive construction features, they will operate with equal efficiency when installed vertically or horizontally.

The Gate Assembly contains the 4 POINT WEDGING MECHANISM. When the valve is closed, pressure is applied at 4 POINTS near the outer edges of the discs. This prevents warped or sprung discs and prevents any chance of leaking. Before you replace any old valves or install new ones, be sure you know all about this superior Mueller Gate Valve. Write us for full information.

MUELLER CO.

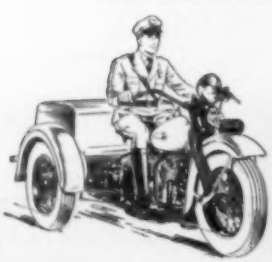
For 29 Years Springfield, Missouri, Police Have Used Harley-Davidsons Exclusively!

Shown is the Springfield, Missouri, Police Department squad of Harley-Davidson Motorcycles and Servi-Cars. Left to right; Front Row: Estelle Hamilton, William Jones, Stanley Tattleton, Ottis Fittro, Frank Wolford, Lee Waddle, Charlie Walker, Harold Stephen, Charlie Thomas. Rear Row: Roy Lane, Leroy Everttts, Criss Thomas, Earl Sawyer, Floyd Ward, Cecil Reed, Frank Walker.

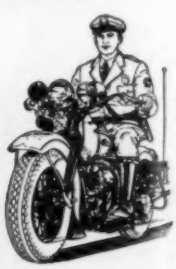
No Substitute for Motorcycle Efficiency in Meeting New and Old Traffic Problems

WITH the toll of traffic deaths and injuries mounting higher and higher, prevention of accidents is attracting more and more public attention throughout America. Police departments everywhere are intensifying their efforts to relieve congestion and improve control methods. Springfield, gateway to Missouri's vacation land, where seasonal traffic is unusally heavy, has long relied on motorcycles for effective traffic control. The first Harley-Davidsons were put in operation in 1919. They proved so satisfactory that this method of handling traffic has been followed ever since. Springfield police use both solo machines and Servi-Cars, finding the latter especially effective for parking inspection and for patrol of congested areas. In your city, also, the use of Harley-Davidson Motorcycles will enable you to get best results in modern traffic control. Ask your dealer to show you the superiority of Harley-Davidson Motorcycles, Servi-Cars and sidecars for police work.

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin



HARLEY-DAVIDSON
POLICE MOTORCYCLES



Universal Concrete Pipe Company Grows Up

Universal Concrete Pipe Co., 297 So. High St., Columbus, Ohio, has grown up considerably since this picture was taken during the fall of 1921. The 13 employes of the company lined up for a picture in the yards of the New Martinsville, W. Va., plant.

Second from the left in the front row, with the straw hat, is President H. X. Eschenbrenner. Directly behind him is Vice-president Henry Leuliette.

Today, Universal has expanded into eight states and 15 cities with its plants and offices. Plants are located in Decatur and Dothan, Ala.; Atlanta, Ga.; Kenvil, N. J.; Columbus and Zanesville, Ohio; Norristown and Pittsburgh, Pa.; Nashville, Tenn.; Clarksburgh, New Martinsville, and Wheeling, W. Va.

Subsidiary companies are in Erie, Pa.; Cleveland, Sandusky, and Youngtown, Ohio; Augusta, Ga.

H. M. Cahill Appointed Sales Manager

H. M. Cahill has been appointed sales manager of the Small Engine Dept., Nordberg Mfg. Co., Milwaukee 7, Wis. Mr. Cahill has had extensive sales engineering experience in the smaller four-cycle diesel-engine field. Before joining Nordberg, he was assistant to the sales manager of the National Supply Co., Springfield, Ohio. He has also been associated with the Buda Co., of Harvey, Ill.

H. M. Cahill

GRASS CONTROL
THROUGH ALL
CUTTING SEASONS
WITH
WHIRLWIND
TRADE-MARK
Reg. U. S. Pat. Off.

THE ONLY POWER MOWER WITH THE 15-YEAR SERVICE-PROVED, ROTARY SCYTHE, SUCTION-LIFT CUTTING ACTION

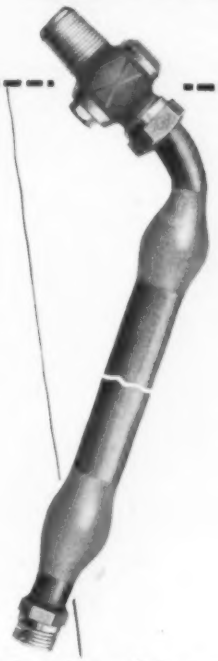
WHIRLWIND MOWERS cut grass or weeds of any height, in any condition—cleanly, uniformly, rug-smooth. Suction action lifts matted growth into the high speed cutting zone of the Horizontal blade. Clippings are "mulchified" by being repeatedly slashed while carried in suspension in the cutting zone. Under normal conditions this eliminates need for raking or grass catching. WHIRLWIND MOWERS cut close to obstructions, walks, trees, flower beds, fences, and under low-hanging shrubbery. No hand trimming necessary.

To keep your grounds beautifully trimmed at minimum time and labor cost, through all seasons—entrust grass control and maintenance to WHIRLWIND POWER MOWERS. Write for complete descriptive literature and name of our nearest dealer. Address Dept. ACI-2.

Left, above: GRASS KING Model — 31-inch cut; powered by 6 hp. 4-cycle air-cooled engine. Cuts 6 acres per 8-hour day.
Right: Model SP — 24-inch cut. Ideal for general lawn maintenance. Powered by 3 hp. 4 cycle air-cooled engine. Cuts 4 acres per 8-hour day.

WHIRLWIND CORPORATION 3707 N. RICHARDS ST. MILWAUKEE 12, WIS.

STRENGTH *and* SERVICE



McDonald Lead Goose Necks, with hand-wiped joints, are of extra strength lead pipe, fashioned by experts to provide the maximum in strength and service. They're made with the same high standards that have brought continued leadership to the Diamond Line for 92 years. Available in ½, ⅝, ¾, 1, 1⅛, 1½ and 2 inch sizes. For the best . . . specify McDonald for your waterworks requirements.

EST. 1856
McDonald

A. Y. McDONALD MFG. CO.
DUBUQUE, IOWA
BRASS GOODS • PUMPS • OIL EQUIPMENT

PROVIDE FOR TIFA IN YOUR BUDGET

...FOR FLY AND MOSQUITO CONTROL

...FOR BETTER HEALTH

...DEATH-DEALING FOG FOR INSECTS

THIS summer, solve your fly, mosquito, weed and health problems *quickly* and *efficiently* with TIFA . . . a compact, easily handled applicator, powered by its own standard-make gasoline engine.

TIFA discharges the newly developed as well as older type insecticides and hormones *of the selected particle size in a true, clean fog* . . . spreads quickly over wide areas . . . clings to all objects in its path . . . permeates the smallest crevices.

TIFA is essential to your community's health and well-being. Use TIFA on garbage and fill dumps, in recreational areas and swamps. PORTABLE . . . BUILT TO LAST . . . ECONOMICAL. The Health Department of a famous city estimated that TIFA insect control costs less than 2% of previous methods.

TIFA

TODD INSECTICIDAL FOG APPLICATOR

Write for illustrated folder on sensational TIFA—full details on how it operates, what it does and official comments on its astonishing effectiveness.

A Product of

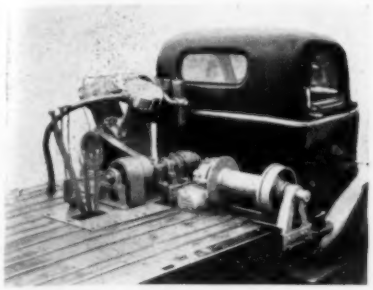
COMBUSTION EQUIPMENT DIVISION

TODD SHIPYARDS CORPORATION

81-16 45th AVE., ELMHURST, QUEENS, N. Y.

New Truck-Mounted Power Winch

Power for operation of a new truck-mounted compressor and winch is transmitted from the truck engine by a



The Davey truck-mounted "Auto-Air" compressor-winch assembly.

Davey heavy-duty power take-off installed in the truck's driveshaft. A countershaft with two individual Twin Disc clutches provides for either simultaneous or separate operation of compressor and winch. The compressor delivers 105 cfm at 100-pound pressure; the winch has a 25,000-pound capacity.

The assembly is recommended especially for pipeline, public utility, and airport maintenance, a number of units being now on order from state and county highway departments. Compressor, winch, and take-off are manufactured by the Truck Equipment Division of the Davey Compressor Co., Kent, Ohio.

Traffic Paint

Porcelite traffic zoning paint is said to adhere tenaciously to street or parking lot, regardless of the composition of the surface. It dries in 20 to 30 minutes, and one coat does the job. The paint is available at Industrial Sales Division of the Thomson-Porcelite Paint Co., 829 North Third St., Philadelphia 23, Pa.

New Vice-Presidents For Chain Belt Co.

Three new vice-presidents have been elected by the board of directors of the Chain Belt Co., 1600 W. Bruce St., Milwaukee 4, Wis., manufacturers of Rex concrete mixers, Moto-Mixers, plaster and mortar mixers, pavers, water pumps, and the Pumpcrete — the pump that pumps concrete.

B. F. Devine

B. F. Devine joined Chain Belt in 1909, serving as sales manager and later as manager of the Construction Machinery Division. Mr. Devine will continue his activities as manager of that division.

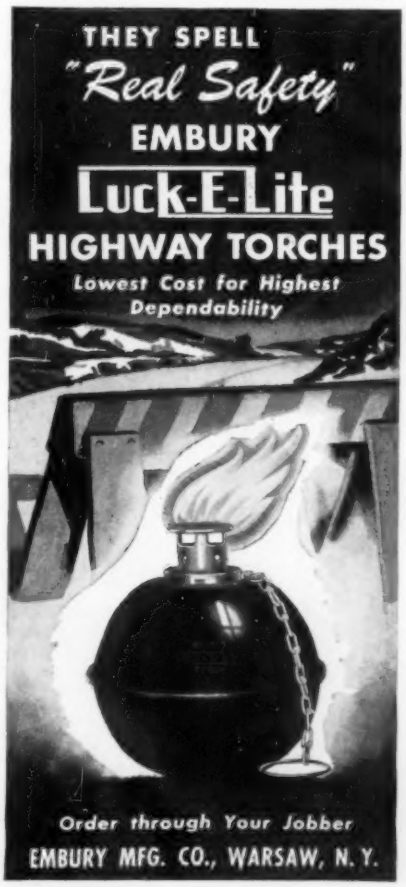
L. B. McKnight was elected vice-president with executive responsibility for the two heavy-machinery divisions covering conveyor and process equipment and construction machinery. Vice-president in charge of finance is O. W. Carpenter.

General Detroit Appoints Zone Sales Managers

E. A. Warren, vice-president in charge of sales for The General Detroit Corp., 2270 E. Jefferson, Detroit, Mich., has announced the appointment of three new zone sales managers: Charles W. Self, in Cincinnati; Paul R. Warren, Boston; John Macksey, St. Louis.

E. A. Warren

The General Detroit line of Underwriters' Approved portable fire extinguishers includes vaporizing liquid, carbon dioxide, foam, soda-acid, and pump types, all marketed under the name Quick Aid Fire Guard. In addition, the company sells fire hose, motorized fire equipment, and allied fire-fighting apparatus.



CUT COSTS... SPEED WORK

with this steel sheeting

ARMCO Steel Sheeting is ideal for trenches, core walls, cofferdams, bulkheads, bank protection, low retaining walls and other similar uses.

Light weight and a small displacement area make ARMCO Steel Sheeting a fast-driving, cost-cutting tool on either temporary or permanent construction. You'll like the way it saves you time and money.

Both interlocking and flange type ARMCO Steel Sheeting can generally be driven to full penetration before excavation. The corrugated metal design assures ample strength without excess bulk. It means easier handling, faster driving and lower costs.

Another big advantage is that on temporary jobs ARMCO Sheeting can be readily pulled and used over and over again. A convenient slot near the top of the section makes pulling easy.

There is no problem in hauling or storing ARMCO Steel Sheeting. Sections nest together and save space. Interlocking type sheeting is available in gages 12 to 7; flange type in gages 12 to 3. Standard lengths are from 6 to 20 feet or more in multiples of 2 feet. Write for prices and complete information. Armco Drainage & Metal Products, Inc., 1285 Curtis St., Middletown, O.

ARMCO STEEL SHEETING

ARMCO

KARPARK

KEEPS STEADILY ON THE GO

In constant use, the modern elevator whisks its passengers up and down the towering skyscraper. For safety, for dependability extra strength is built into cables, cab and motors. Without reliable operation tall soaring buildings would not be practical. The constant steady operation of the KARPARK makes meter parking successful and practical. There is extra rugged strength in its escapement, its standard, in its machine cut staffs, pinions and gears. That's why KARPARK operates accurately, dependably and economically for years —in any kind of weather. With easy automatic operation, easy enforcement and easy maintenance KARPARK brings modern parking control and an income to the city that far exceeds all costs. Write for full information.

KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK CO.

THE WISE CHOICE

KARPARK *Automatics*

KARPARK CORPORATION, CINCINNATI 6, OHIO

WORLD'S BEST

Ninety-four years' faithful service —thousands of installations in a thousand American communities— give MURDOCK indisputable right to the title of "World's Best."

They are dependable. Operate every day in the year. Hardly require any attention. Self-draining, non-freezing, non-rusting.

"It Pays to Buy MURDOCK."

The Murdock Mfg. & Sup. Co.
426-430 Plum St., Cincinnati 2, Ohio

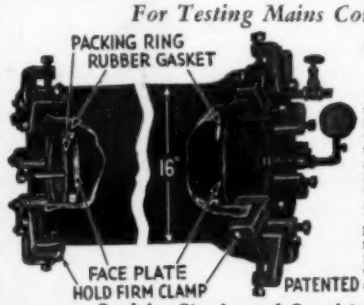
MURDOCK

OUTDOOR DRINKING FOUNTAINS
HYDRANTS
STREET WASHERS

"HOLD FIRM"

A NEW TEST PLUG

For Testing Mains Conveying



WATER GAS OIL AIR

For testing cast iron, steel, transite, soil and concrete pipe lines, without the necessity of valves; test pipe as you lay them; eliminate open trench and hazards; special for testing reclaimed pipe, valves and fittings. Installed by any unskilled laborer; withstands 300 lbs. hydrostatic pressure, light in weight; same clamps fit many sizes of pipe. Made in all sizes. Used by the City of Chicago, contractors and municipalities.

Send for Circular and Complete Information

TEST PLUG MFG. CO. (not Inc.) SKOKIE, ILL.

"GUNITE" CONCRETE

(Since 1915)

SPECIALISTS IN CEMENT GUN WORK

RESERVOIR LININGS (NEW AND OLD) • CONCRETE AND MASONRY REPAIRS • STEEL ENCASEMENT • FIREPROOFING • STEEL COAL BUNKER, STACK, HOPPER, AND PLATE LINING • SEWER LINING AND REPAIRING • CANAL, DITCH, AND DRAIN LINING.

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Road Kansas City 6, Missouri

District Branch Offices

R. N. Turner, Dist. Mgr., 228 N. La Salle St., Chicago 1, Ill.
B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.
Philip D. Barnard, Dist. Mgr., 2036 Addison, Houston 5, Texas.

Branch Offices: DENVER • DALLAS • NEW ORLEANS

New Harley-Davidson Single-Cylinder Motorcycle

William J. Harley, chief engineer of the Harley-Davidson Motor Co., Milwaukee, Wis., points to the 3-speed foot-operated gear shift of the firm's new single-cylinder model 125. Around the motorcycle, which incorporates a clutch of the wet-disc type controlled by a lever on the handlebars, are, left to right, Gordon M. Davidson, vice president, Arthur Davidson, general sales manager, and William H. Davidson, president.

Permutit Opens Rochester Office

The Permutit Co., 330 West 42nd St., New York, N. Y., has appointed Austin F. McCormack of its New York office to the position of sales manager in charge of the water conditioning firm's newly established Rochester office in the Commerce Bldg., 119 Main St., East, Rochester. This office is replacing the one formerly in Syracuse, which has been directed by F. D. West. Mr. West, who has been with Permutit for the past 29 years, is retiring.

A. F. McCormack

Cities Installing More Generating Capacity

During the four years of war few of the country's more than 500 municipal diesel-electric plants were able to increase capacity. New diesel engines and generators were out of the picture unless the town had war industries. Normal lighting demand alone built up a need for engine generators that only now is being satisfied. That they are going in at last is shown by pictures of some new installations in the "E-M Synchronizer" published by Electric Machinery Manufacturing Co., Minneapolis 14, Minn.

Of five installations illustrated, McGregor, Iowa, has put in the smallest generators, two 325-kvas operating in parallel. Next comes Forest City, Iowa, with a 716-kva. Monroe City, Mo., recently installed a 1080-kva generator and Vermillion, S. D., one of 1125 kva. A map shows a hundred other towns in which E-M generators are operating.

APCO-V-APCO PRIMERS

AUTOMATIC
POWER
OR
TANK PRIMERS

AIR RELEASE VALVES

FOR

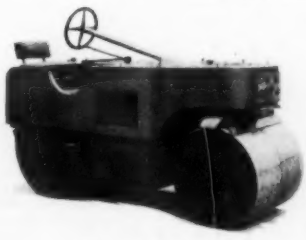
FILTER PIPE LINES
DISTRIBUTION LINES
AND OTHER USES
17 TYPES

VALVE AND PRIMER CORPORATION

30 W. Washington St.
CHICAGO 2, ILL.

A Roller For Every Job

Sturdy, heavy-duty rollers, engineered to stand up under the toughest conditions. Pierce-Bear Tandem Rollers are powered by economical Allis-Chalmers 4-cylinder industrial type gasoline engines. Variable weights, from 3½ to 5 tons with built-in water tanks for ballast and wet rolling.



Pierce Baby Bear
2½-3 tons

Pierce Medium Bear
3½-5 tons

The new 2½-3-ton Pierce Baby Bear is designed for close-in work and small area maintenance. It works against a curb up to 25 inches high and within 1½ inches of a higher wall or building. Final drive is within the rear roll. Use Pierce-Bear Tandem Rollers for all-around performance. Write for folder.

Pierce-Bear Rollers
Lewis Manufacturing Co.
415 Hoefgen Ave.—San Antonio 6, Tex.

New Rotary Snow Plow

The SnoMaster is a new rotary snow plow manufactured by the Iowa Mfg. Co., Cedar Rapids, Iowa. It is a self-contained unit that can be attached to almost any 2½- to 5-ton four-wheel-drive truck. There is no extra power unit to mount and no special transmission is required.

Powered by an 8-cylinder, 114-hp engine equipped with starter and generator, the SnoMaster can be used to open drifts of any depth in snow of any consistency. Rotary picks driven by chains and suspended by springs in front of the plow can be raised or lowered by hydraulic controls to cut away frozen snow.

The 18-inch auger on this Cedarapids plow is ball-bearing-mounted and is driven through a shear-pin flange for safety. The rotor is a disc with six blades of special steel and provided with a shear pin.

A chute controlled from the operator's cab throws the snow to the right

The SnoMaster shooting the snow high to the left of the road.

or left. A removable loader hood at the top of the chute, also controlled from the cab, can be adjusted so the snow can be blown a considerable distance from the road or runway being cleared, or blown directly into trucks when cleaning city streets.

Power-Driven, Tractor-Type Portable Gate Operator

A power-driven tractor-type portable gate operator on pneumatic-tired wheels which can be transported in any pick-up truck (does not require a truck with an arrangement for attaching the power take-off for operating) is the latest development of Payne Dean & Co., Madison, Conn.

Three models are available: one is driven by an electric motor, one by a 5-hp gasoline engine, and one by a 10-hp gasoline engine.

The Gatender's principal use is general maintenance of gates from 10 to 36 inches which operate with balanced flow; operation of floor stands inside and outside filtration plants, pumping

The Gatender performing in its capacity as gate operator.

stations, and sewage disposal plants, and on dams; operation as a self-contained power truck for winches and pipe-cutting and tapping machines. It can be converted into a self-propelling miniature tractor for operating snow-plows and single 36-inch lawn mowers.

Burns and Kenerson Engages Buchanan

The firm of Burns and Kenerson, Inc., consulting engineers of 20 Kilby St., Boston 9, Mass., has engaged Ivan A. Buchanan to take charge of the company's sanitary engineering section.

Previously, Mr. Buchanan was with Hayden, Harding and Buchanan.

QUALITY *Control* OF BUFFALO METERS

PAYS OFF FOR YOU!

A portion of factory test department for large meters.

● Quality control of materials and manufacturing assures top performance of Buffalo Meters that will in turn mean long-term uninterrupted service for you!

Quality control culminates in the individual accuracy calibration and hydrostatic pressure test. Accuracy that endures is attained by a balance between precision of measurement and freedom of action.

These fine-quality meters have won a majority of the many accuracy tests in which they have been entered—ample proof of how quality control pays off for you when you equip with *American* or *Niagara*.

Buffalo Meter Company manufactures the *American* Meter (bronze casing) for soft or filtered water, and the *Niagara* Meter (galvanized-iron casing) for most hard water requirements.

Write for descriptive booklet!

AMERICAN BRONZE CASE **NIAGARA** GALV. IRON CASE

WATER METERS

BUFFALO METER COMPANY

2902 MAIN STREET • BUFFALO 14, NEW YORK

Protect Concrete In Sewage Treatment Plants

There are three coatings developed in recent years that are particularly resistant to corrosive gases and fungi found in sewage, according to the Amercoat Division, American Pipe and Construction Co., Box 3428 Terminal Annex, Los Angeles, Calif.

The first, Amercoat No. 33, has been developed for general maintenance use around sewage treatment plants and pumping stations. It has been designed in particular for use on the exterior of elevators, structural steel tanks, guard rails, walkways, and floors that are exposed to fume and splash corrosion. It usually is applied is three coats. When applied properly, it makes a tough abrasion-resistant film with a high degree of resistance to oxidation and corrosion.

The second coating, Amercoat No. 23, is designed for use under more severe conditions on the metal parts of clarifiers, as a coating for concrete in rotary pumps, and in digestion tanks or other areas where severe gas conditions may be encountered.

The third is the Amercoat No. 16 plastic coating. This coating is recommended for the interior of manholes, pump chambers, and similar structures where the coating is subjected to continuous and confined gaseous conditions.

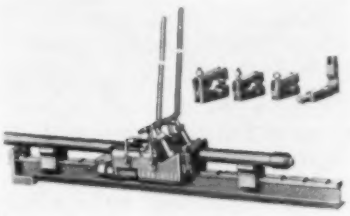
A new bulletin issued by Amercoat Division describes these coatings more fully, and gives examples of their applications in the sewerage field.

Street Paved with Gold

If Cortez' Spaniards had been able to wait a few centuries, they would have found their dreams come true—streets paved with gold. Streets and highways throughout the northern states are lightly paved with gold every time rock salt is spread on them to remove snow and ice, according to the International Salt Co., Inc., Scranton, Pa., since rock salt contains small quantities of gold. To date, however, no one has been able to extract gold from salt economically.

Hydraulic Pipe Pushers Make Service Installation Easy

Both time and effort are saved in appreciable quantities through the use of a hydraulic pusher when installing pipe underground. This is because only a short trench is required for the pusher and a section of pipe, and one man can operate the pusher to send the pipe where it is wanted. By this method pipe for any purpose—water, gas, electric cable—can be pushed under streets, lawns, railroads, and floors. With a large pusher, large-diameter concrete ducts are often pushed under railroads and streets for drainage purposes or to carry sewage lines. Greenlee Folder S-117 gives information on sizes and on the power pump, which eliminates manual operation of the



The Greenlee hydraulic pipe pusher.

pusher and speeds up the work on extensive jobs. Greenlee tools also include hydraulic benders for pipe, conduit, tubing, and busbars; electricians' punches, joist borers and cable pullers; auger bits, carpenters' chisels, spiral screw drivers, etc. For literature, write Greenlee Tool Co., Rockford, Ill.

International Harvester Appointments

W. K. Perkins, manager of sales, International Harvester motor truck division, 180 North Michigan Ave., Chicago 1, Ill., announces the appointments of R. L. McCaffrey as assistant manager at the Lincoln, Nebr., branch, and J. R. Scott as assistant manager of the company at Grant Island, Nebr.

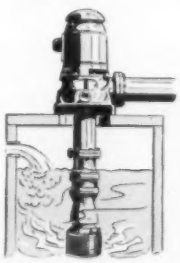
For Your Next Job — STOP and CONSIDER

the FLEXIBILITY of the

Peerless Vertical Turbine Pump

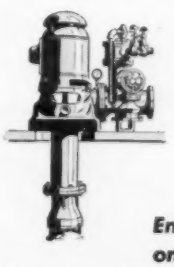
1. AS A DEEP WELL PUMP

For a dependable source of clean water, Peerless Vertical Turbine Pumps are recognized leaders in the field; noted for their adaptability to widest pumping conditions, they embody many exclusive engineering features for extended pumping efficiencies. Install these deep well vertical turbine pumps with the type of drive or combination most suitable to your specific application. Capacities from 15 to 30,000 g.p.m. are obtained from all practicable depths.



2. AS A CLOSE-COUPLED PUMP

You're assured of full turbine pump utility and capacities with an extremely compact installation. Ideal for pumping from short or medium settings. Capacities up to 30,000 g.p.m. are delivered from sumps, pits and surface water sources for booster service, circulating, de-watering and a host of other applications.



3. AS AN APPROVED FIRE PUMP

Install this versatile Peerless Vertical Turbine type Fire Pump, with proper fittings, for a permanent and reliable water supply for adequate plant fire protection. *Underwriters' approved*, these pumps produce from 500 to 2000 g.p.m. against heads to 285 ft. Extremely simplified in piping arrangement.

Engineering Information Available on All Three Vertical Turbine Types

Write to nearest office stating what your pumping conditions are; give diameter and depth of well, distance to water, capacity desired, total head, type of lubrication (oil or water) and type of drive. The bulletin that specifically describes the pump to fit your specific needs, together with appropriate engineering data will be furnished. Plan with Peerless Vertical Turbine Pumps!

PEERLESS PUMP DIVISION

Food Machinery Corporation

Factories: Los Angeles 31, Calif.; Quincy, Ill.; Indianapolis, Ind. *District Offices:* Chicago 40, 4554 No. Broadway. Philadelphia Office: Suburban Square, Ardmore, Pa. Atlanta Office: Rutland Building, Decatur, Georgia; Dallas 1, Texas; Fresno, Calif.; Los Angeles 31, Calif.

fmc

PEERLESS PUMPS

Kells Joins Neptune

Gordon King Kells has joined the Neptune Meter Co., 50 West 50th St., New York 20, N. Y., with offices with the San Francisco sales force, located at 320 Market Street.

Gordon King Kells

Mr. Kells' experience includes service with the California State Department of Natural Resources, Division of Forestry and Parks, as a fire specialist.

Joslyn Distributors

The following changes have been made by the Joslyn Mfg. and Supply Co., 20 N. Wacker Drive, Chicago, Ill.:

The Jobbers Supply Co., St. Paul, Minn., will operate as a division of the Joslyn Mfg. Co. and Supply Co., using the name Joslyn Mfg. and Supply Co., and will continue the office and warehouse in St. Paul.

The Jobbers Supply Co. of Seattle, Washington, and Portland, Oregon, will operate as a division of the Joslyn Pacific Co. Offices and warehouses will be maintained as in the past, but will be under the name of Joslyn Pacific Co. (formerly the Joslyn Company of California).

Another recent announcement is of the election of Vice-President Philip W. Lotz to the position of executive vice-president.

Buffalo-Springfield Appoints Shaffer

Murray D. Shaffer, previously director of the Ohio Department of Highways, has been appointed director of sales and research consultant by the Buffalo - Springfield Roller Co., Springfield, Ohio.

Murray D. Shaffer

Mr. Shaffer's work in the highway construction field includes the positions of deputy engineer in charge of design and construction of highways and structures in Richland County, Ohio; consulting engineer in Mansfield, Ohio, as well as safety and service director for the same city; technical representative for the Portland Cement Association, and engineer-director of Macadam Pavements, Inc. (a technical and research organization for the improvement of highway design.)

LOWEST COST *REFUSE DISPOSAL*

Brooks Load Lugger

It's America's most efficient method of collecting, hauling and dumping garbage or refuse! Load Lugger is a powerful hydraulic hoist, easily installed on any standard truck chassis . . . works with 5 to 10 detachable truck bodies or water-tight, enclosed "containers." Eliminates unsightly garbage cans . . . tremendous savings in trucks and operating costs.

Write for Catalog

BROOKS EQUIPMENT & MFG. CO.

1950 Davenport Rd. **Knoxville, Tenn.**

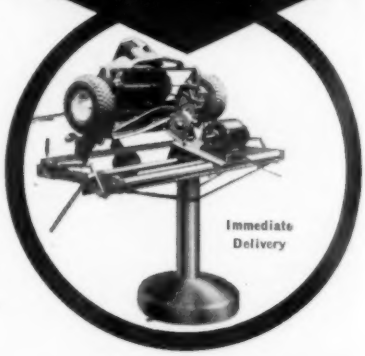
For PARKS, SCHOOLS, GOLF COURSES, AND PLAYGROUND OPERATIONS

get the Facts on the

NEW AMAZING

modern

LAWN MOWER SHARPENER



For the first time in history, the Modern Lawn Mower Sharpener will sharpen all types of mowers . . . hand, power, gang or fairway unit . . . in from 10 to 20 minutes. From 5-inch edgers to 36-inch power mowers. Dismantling is eliminated. Handle, wheels, roller or motor remain in position when sharpening even the most complicated mower. The Modern Lawn Mower Sharpener eliminates all hand filing. It precision grinds to the extreme ends of both left or right reel blades on any type of mower. Bottom knife is held in same brackets for sharpening. No extra attachments required for grinding.

PRICE $241.50 (LESS MOTOR)

modern

LAWN MOWER SHARPENER

1 Lowers Capital Investment and Reduces Maintenance Equipment Overhead . . . the same unit sharpens all types of mowers . . . hand, power, gang or tractor.

2 Increases Productivity . . . Speeds all sharpening operations . . . Eliminates Hand Filing and dismantling time . . . Automatically precision grinds to 1/1000 inch.

Send for FREE Descriptive Bulletin 25A

modern

MANUFACTURING CO.

160 N. Fair Oaks Ave., Pasadena 1, Calif.

Bantam Trailers Handle Floodlights

To provide adequate lighting for night construction projects, Arrow Supply Co., Pittsburgh, Pa., has developed a portable 3,000-watt light tower and generator rig. Mounted in half-ton all-steel Bantam utility trailers manufactured by the American Bantam Car Company, Butler, Pa., these new lighting units are being used now on some Pennsylvania state highway projects.

The welded steel tower operates on a hinge fastened to the trailer canopy. On top of the tower are two 1,500-watt clear globes in reflectors. When erected, the tower is 18 feet in height, and, when folded, it has approximately 9-feet road clearance. The lights are pivot-mounted and have adjustable beam and spread.

Welded to the steel bed of the Bantam trailer is a gasoline-powered generator, manufactured by D. W. Onan & Sons, Minneapolis. It has a 5-gallon fuel tank and can be started automatically, providing A. C. power for the lights. A 12-volt circuit for battery charging also is included.

Two floodlights atop the 18-foot steel tower provide illumination for night construction projects. The tower can be folded for transporting, with a road clearance of 9 feet. Current is supplied by a gasoline-powered generator stationed in the trailer.

The generator weighs 460 pounds, and the other equipment about 440 pounds. These trailers are designed so that they are perfectly balanced when being pulled or when stationary, resting on the front leg support. The chassis, constructed of a 3-inch frame with three 3-inch cross members, is strong enough to withstand use on rough terrain.

This portable trailer lighting outfit has other potential usages. Some have been purchased for use in mining operations at night, and a South American country has ordered several for night construction work. Another anticipated usage is during peak harvest seasons in agricultural areas, where fruit and vegetables must be picked quickly, necessitating 24-hour operations.

It was found on the initial project at Greensburg, Pa., that three of these units, a total of 9,000 watts, furnished sufficient illumination to comply with Pennsylvania state laws governing adequate lighting for night work.

Dearborn Appoints Goris

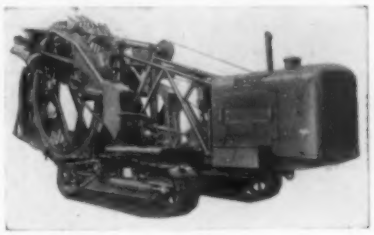
The Dearborn Chemical Co., 310 South Michigan Avenue, Chicago, Ill., has announced the appointment of Earl J. Goris as advertising manager.

Earl J. Goris

He was formerly with Aubrey, Moore and Wallace, *The Honolulu Advertiser* in Hawaii, Wade Advertising Agency and most recently, in the advertising department of General Electric X-Ray Corporation.

Dearborn specializes in boiler water treatment and rust preventives.

Buckeye's New Ditcher For Municipal Work



Gar Wood Industries, Inc., Findlay Div., Findlay, Ohio, has placed on the market the successor to the Buckeye Model 12.

The New 312 Ditcher offers greater range, simplified controls, and better balance. It is built for longer service, faster digging, and reduced operating and maintenance costs.

Model 312 cuts a ditch 16 to 30 inches wide, depending on the buckets used, and up to 6 feet deep, as compared to the 5½-foot depth of the old Model 12. The digging wheel is supported by a rugged frame made of tubular members. The machine is a few inches shorter than its predecessor and about 500 pounds lighter.

The 312 can summon 67 hp at 1,600 rpm. A fluid coupling in conjunction with a friction clutch permits loads to be picked up or relieved with either or both. Digging speeds up to 57.5 feet per minute are provided, which is over 50% greater than the maximum speed of the Model 12. The new ditcher has four forward and four reverse speeds.

New Air-Pak Breathing Equipment

A new model of the self-contained breathing equipment, the Senior Sling Pak, Model 6000-B4, is being manufactured by The Safety Equipment Division of Scott Aviation Corp., Lancaster, N. Y.

Providing a minimum of 15 minutes' use at extreme exertion and supplied in a carrying case with provision for a spare cylinder, the Air-Pak permits entry into unbreathable atmospheres through extremely small manholes or doors. Each inhalation provides all the air demanded by its wearer.

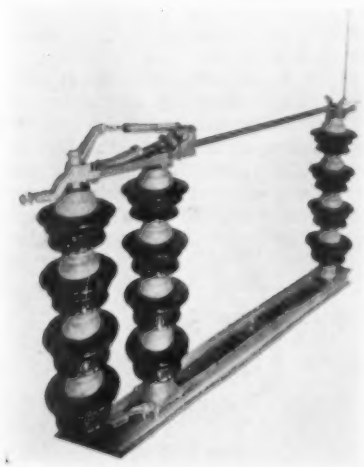
Nymberg New Sales Manager For Hercules Steel

R. J. Nymberg has been appointed general sales manager of the Hercules Steel Products Corp., Galion, Ohio, manufacturers of hydraulic hoists, bodies, and other automotive equipment. Mr. Nymberg will have charge of sales and advertising of Hercules automotive products, and will be assisted by an enlarged staff of sales engineers and district representatives.

R. J. Nymberg

Mr. Nymberg was previously associated with Gar Wood Industries, Inc., in the capacities of body engineer, sales engineer, and sales manager.

New Outdoor Disconnecting Switches



The switch in closed position.

The Switchgear Divisions of the General Electric Co., Schenectady 5, N. Y., announces a new line of group-operated disconnecting switches for 115- to 230-kv outdoor service. The Type RF features silver-to-silver line-pressure contacts, a simplified operating mechanism, and complete elimination of current-carrying braids.

On the hinge end of the switch, the silver surface of the movable blade engages the silver surface of a U-shaped clip. The clip is backed by adjustable stainless steel compression springs, assuring a positive contact at all times during opening and closing operations and preventing burning of the switch.

The main contacts also are without braids, and have silver-to-silver line-pressure contacts. They close under a controlled pressure which eliminates unnecessary scoring and excessive wear of the contacts.

The enclosed blade rotating mechanism eliminates critical adjustment of the main operating mechanism.

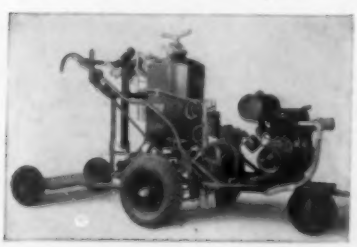
Haydock Appointment

Charles Haydock, consulting engineer, Commercial Trust Bldg., Philadelphia, Pa., has been appointed a member of the Pennsylvania State Registration Board for Professional Engineers.

Columbus Clay Sewer Pipe Elects President

Maurice Maskrey has been elected president of the Clay Sewer Pipe Association, Columbus, Ohio. Mr. Maskrey, a graduate of Ohio Northern University with a major in sewerage engineering, has completed 32 years of work in the rubber industry with The Miller Co., Goodrich, and Firestone, and is well acquainted with the field of modern plastics in the rubber industry. "After all," says Mr. Maskrey, "clay was the first plastic known to man."

Maurice Maskrey



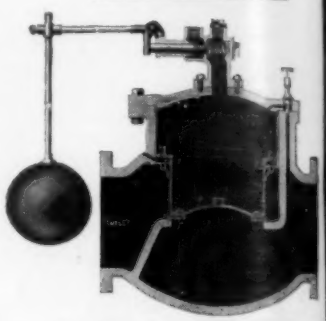
All-Purpose Striper
Solves Zone-Marking Problem

Self-propelled and completely self-contained, designed to meet the needs of city and town street departments, airports and highways, for accurate high-speed striping.

Clean-cut, attractive lines are assured with K-C Air Curtains. Air actuated traction up to 5 mph with a trailer for the operator. Truck-mounted and other models are available for all requirements. Write for illustrated folder.

KELLY-CRESWELL CO., Xenia, Ohio

Golden-Anderson
HIGH PRESSURE
Cold Water
Valves



Needle valve control permits governing of closing speed to suit any operating need. Renewable cups and seat washer prevent metal contacts and make the valve very inexpensive to service and maintain. Write for descriptive technical catalog.

GA
GOLDEN-ANDERSON
VALVE Specialty Company
PITTSBURGH 22, PA.

FIRE BOAT FOR SALE
CITY OF MILWAUKEE
Bids Will Be Received Until 10:00 A.M. Thursday, March 18, 1948

Fire Boat, Milwaukee Fire Department 29 (reserve), was built in 1906. Hull and deck structures are of steel; overall length is 106 feet; beam, 25 feet 7 inches; average draft, 9 feet 6 inches; and maximum speed, 10 miles per hour. Equipment consists of one hand-fired, Page-Burton, water-tube boiler, 7½ feet long and 11 feet in diameter; a double, vertical, non-condensing, propelling engine; 2 Clapp and Jones, vertical, non-condensing, crank and flywheel, duplex, double-acting steam fire pumps, with rated capacities of 2,500 gallons per minute each at 165 pounds pressure; and a 7-kv-a., direct-current generator.

An ungated loop of 10-inch pipe extends from the discharges of the two pumps around the boat, supplying two turret pipes and fourteen 3½ inch hose connections forward. Pumps take suction through gated connections to a common 14 inch header extending across the boat, with a seacock on each side. The forward turret is provided with a 2½ inch tip; midship turret has a 1½-inch tip.

Boat is constructed for ice-breaking and is so engaged in the rivers in winter. Coal storage capacity is ample. Boat is inspected, overhauled and painted annually. Fire is banked and a 40-pound head of steam is normally maintained in this boat.

Condition is good. Will be sold "where is" and "as is." Can be seen at the Milwaukee Fire Department High Pressure Station, 2011 S. First St., Milwaukee, Wisconsin.

For bid information inquire of City Purchasing Department, Room 506, City Hall, Milwaukee 2, Wisconsin.

MARCH 1948

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The American City

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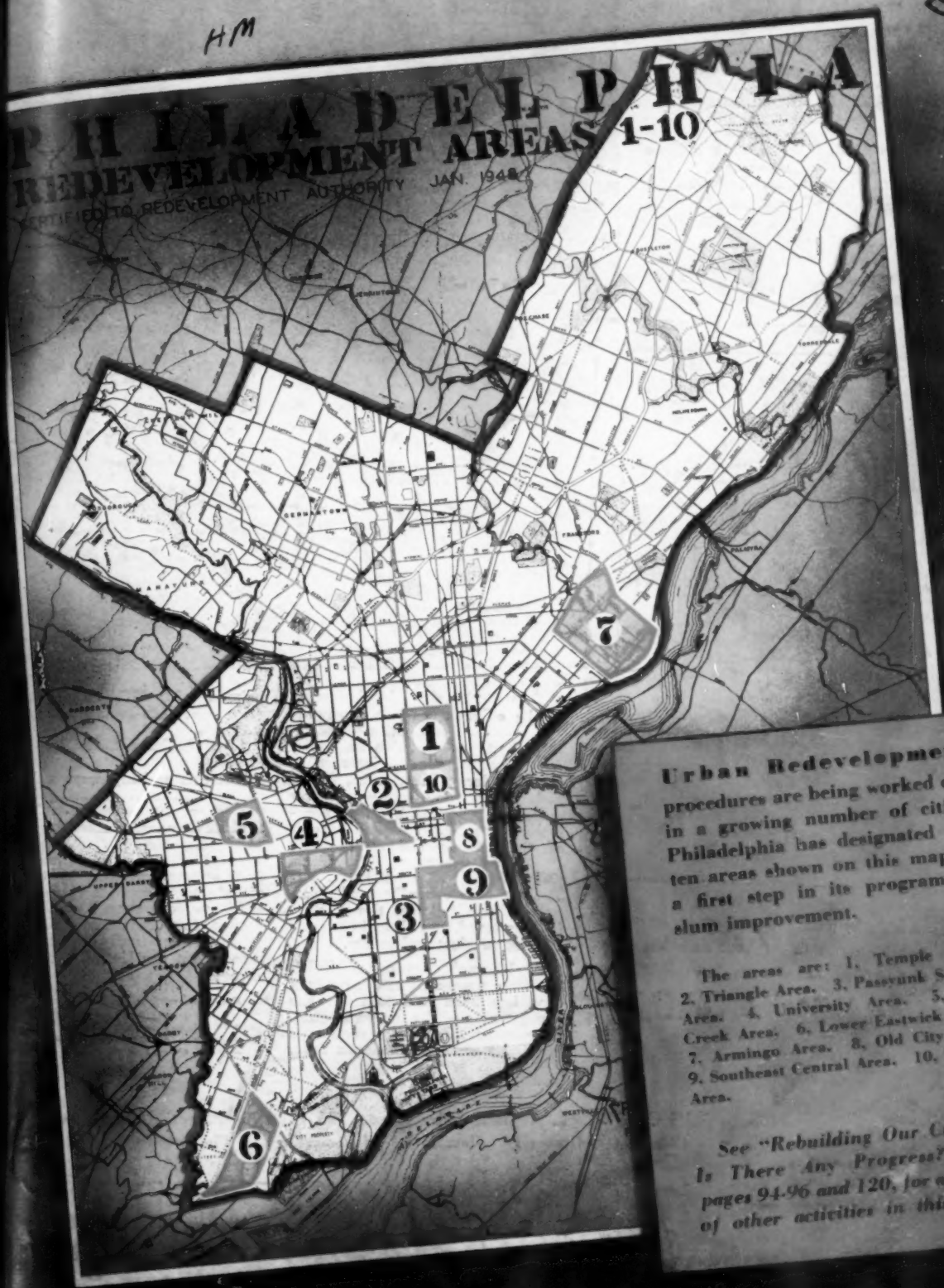

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

Urban Redevelopment procedures are being worked out in a growing number of cities. Philadelphia has designated the ten areas shown on this map as a first step in its program of slum improvement.

The areas are: 1. Temple Area. 2. Triangle Area. 3. Passyunk Square Area. 4. University Area. 5. Mill Creek Area. 6. Lower Eastwick Area. 7. Armingo Area. 8. Old City Area. 9. Southeast Central Area. 10. Poplar Area.

See "Rebuilding Our Cities—Is There Any Progress?", on pages 94-96 and 120, for accounts of other activities in this field.